Rocky Mountain Medical Journal

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CRANIOCEREBRAL TRAUMA
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POSTOPERATIVE PULMONARY INFECTIONS
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*Cutting, W. C.: A Manual of Clinical Therapeutics, ed. 2, Philadelphia, W. B. Saunders & Co., 1948, p. 484.

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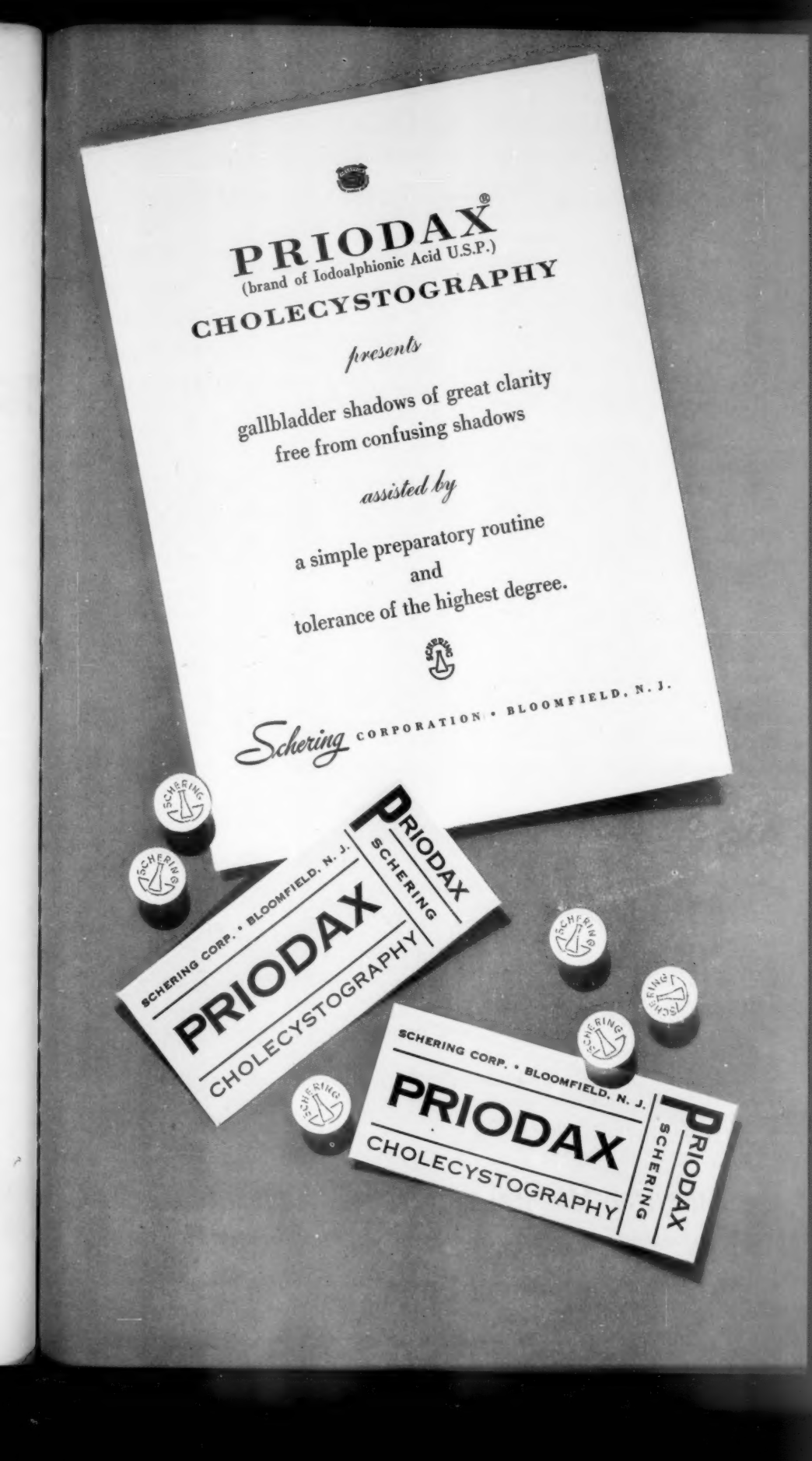

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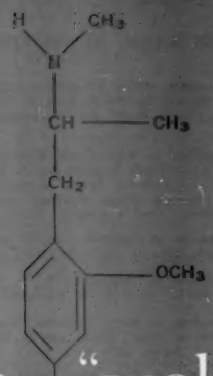

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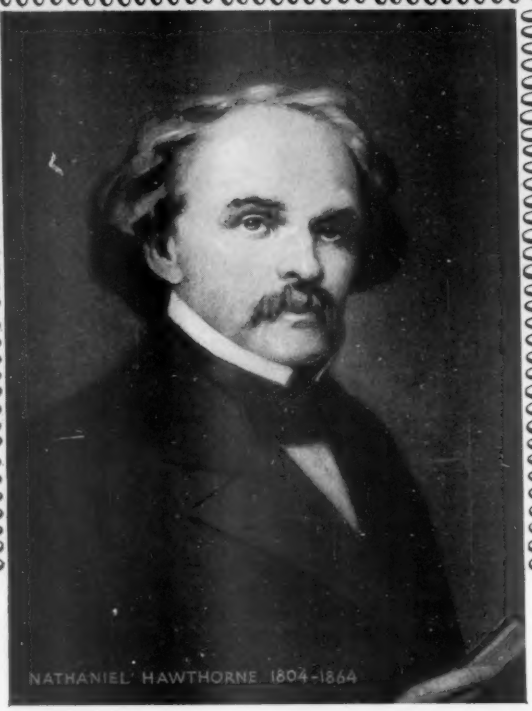

Psychoneurotics of Genius

Hawthorne, distinguished American novelist, is said to have been afflicted with a psychoneurosis from early childhood. His quiet life, wholly detached from the major activities of the times, was largely given over to brooding solitude.

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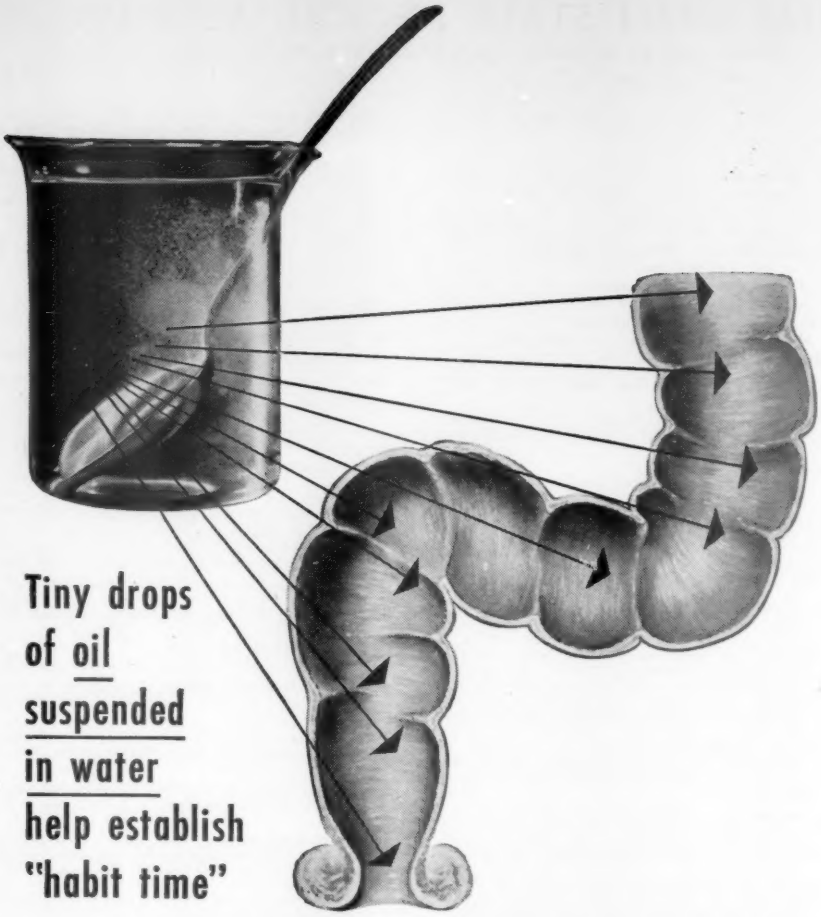

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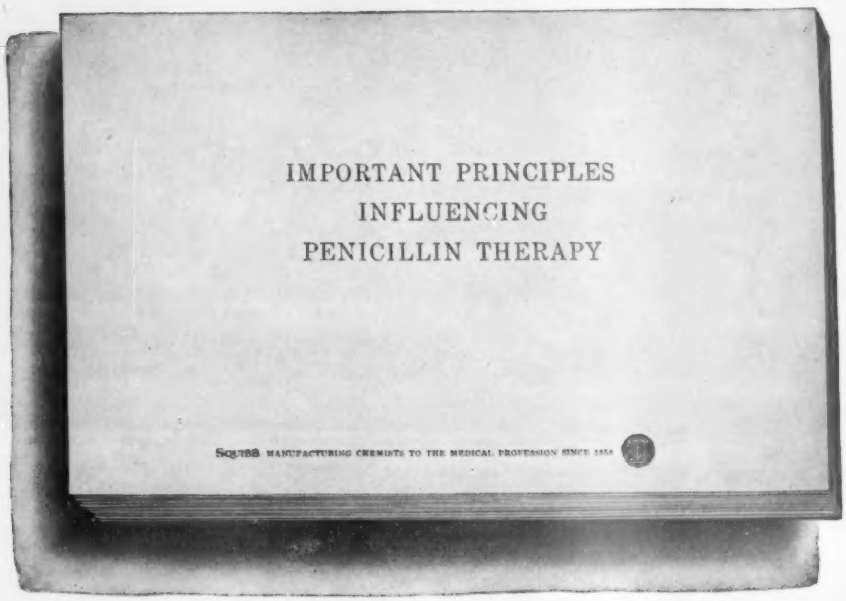

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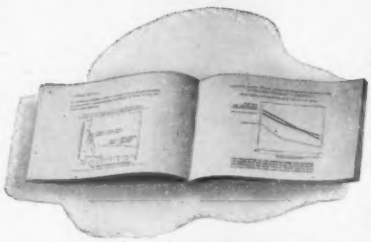

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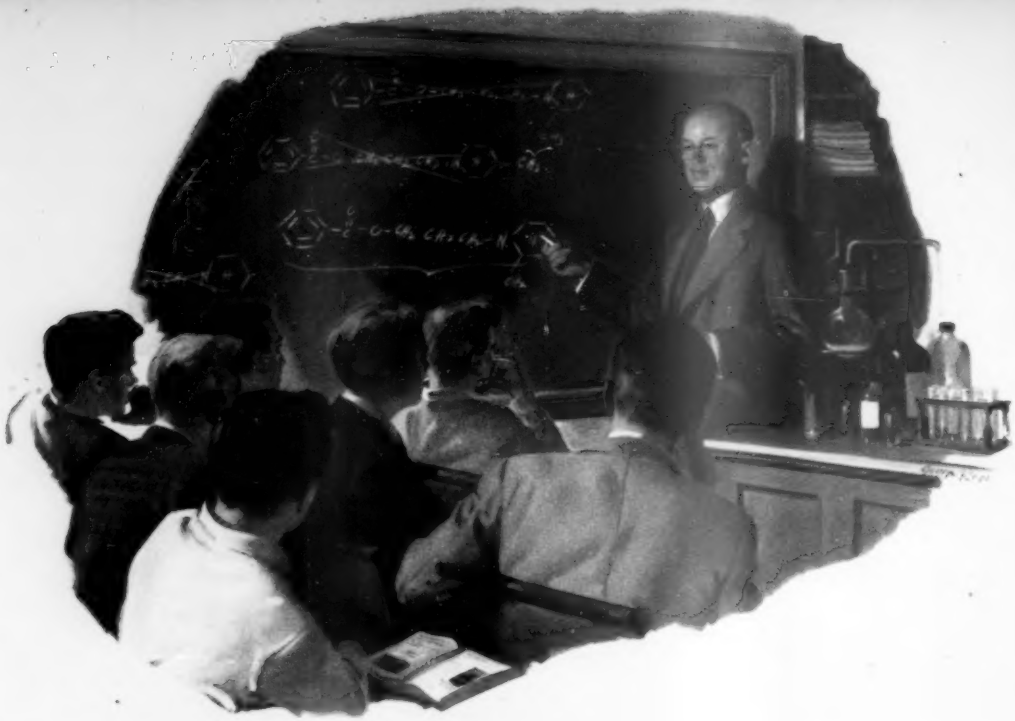

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Rocky Mountain Medical Journal

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FEBRUARY
1952

Editorial

Russians Attend A Medical Meeting

THE Fourth International Congress on Mental Health was held in Mexico City in December, 1951. There were delegates to the Congress from thirty-two nations, including three psychiatrists from Russia. None of the Russians appeared on the published program but at the last plenary session a paper was presented by Dr. A. V. Snejnevsky, Professor of the Central Institute for the Perfecting of Physicians of the U.S.S.R. The paper was entitled "Principles of Prophylaxis of Psychic Diseases in the Soviet Union" and translations in English and Spanish were distributed among the audience before the paper was read. Dr. Snejnevsky read his paper in Russian while the interpreters read the prepared translations from their glassed-in booths at the back of the rostrum and the audience listened to the translations with head sets in the usual procedure of an international meeting. Unfortunately the paper was read quite rapidly and when the doctor finished, the interpreters were five minutes behind, hence a fair proportion of the audience who were not supplied with written translations heard the paper only in part. At the conclusion of the paper the chairman thanked the essayist in German but did not call for discussion.

The paper was remarkable in its content and here we quote the opening lines:

"In the Union of Soviet Socialist Republics, the country of victorious Socialism, the well-being and happiness of the people are the chief concern of the State. Care of the well-being of the population, of health of man is the law of the development of our State. 'Of all precious capitals of the world,' said J. V. Stalin, 'the most precious are people.' The socialist mode of production in the Soviet Union and the corresponding social order have done away with the laws of relative overpopulation inherent to capitalism which dooms millions of urban and rural workers to pauperism, beggary, diseases, and death."

Pavlov was featured as the hero of Soviet psychiatry and under his influence and that of Sechenov "Russian psychiatry has always tended to a physiological understanding of the nature of psychosis, and there lies its originally." Moreover Pavlov studied the social and family conditions of the patient and his conflict situations. Credit for the advance in Soviet psychiatry is also due to the peasants and the workers. "Under the guidance of science they have created in their socialistic State a firm base for a complete sanitation of the country, of working and living conditions for a successful development of the new system of socialistic health services. For the first time in the history of mankind the interests of the State fully correspond to the interests of the people."

The paper extolled the beauties of life under victorious Socialism in the new Russia. "The basic features of our society is general occupation in labor, the right to rest, guaranteed by milliard allocations for this purpose, maintenance in old age, sanitation labor and living conditions prevent diseases including nervous psychic illnesses."

When mental illness occurs among the Russians the patient receives medical care at the expense of the State, and as a rule the same doctor attends him in the hospital,

in the outpatient department, and in his own home. Upon recovery the State finds suitable employment for him in a cooperative of invalids and if necessary the State provides a pension.

Many who listened to the paper thought that Dr. Snejnevsky was not altogether objective in handling his statistics. Not only had the incidence of dementia precox been reduced by half, but in the period between 1930 and 1948 the incidence of manic-depressive psychosis had been reduced to "six times less" while alcoholic psychosis had dropped to "ten times less." And currently there are no cases of alcoholic psychosis or general paresis in the Soviet Union. How accurate are these observations? Perhaps a little loose, for the doctor followed with the statement that "neurosis and psychopathy were not observed in the army and the rear during the Great Patriotic War." This appears contrary to human experience.

It was difficult to escape the impression that the doctor's thinking was politically polarized and that he was perhaps obliged to present propaganda rather than factual observations in medical science. Yet psychiatrists can be tolerant, and there is no doubt that those at the meeting shared the sentiments of the Director, Dr. John R. Rees of London, when he publicly welcomed "our friends of the Soviet Union" to the International Congress on Mental Health.

C. S. BLUEMEL.

REPORT OF COLORADO DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION

The Fifth Annual Clinical Session of the American Medical Association was held in Los Angeles, December 4 to 7, 1951. Registration was, approximately, 4,500 physicians and about an equal number of guests. A summary of the activities of the Clinical Session and an abstract of proceedings of the House of Delegates may be found in the Journal A.M.A. of December 22, 1951, pages 1673 to 1702. This report is concise, comprehensive and excellently planned. As all members of the Colorado State Medical Society have access to the Journal A.M.A., your delegates believe that an extended report by them is unnecessary. However, it is urged that members read the report in the Journal. It is only 29 pages and can be read in one hour.

Particular attention is invited to:

The address of President John W. Cline.

The address of Dr. A. J. J. Rourke, president of the American Hospital Association, and of Mr. Donald Wilson, Commander of the American Legion.

"Guides for Conduct of Physicians in Relationship With Institutions."

The report of the Committee on Constitution and By-Laws.

The report of the Coordinating Committee.

The report of the American Medical Education Foundation.

Other items of interest: The Board of Trustees allocated one-half million dollars to the Education Fund for 1952. . . . The Society of Anesthesiologists presented $2,500.00 to the Education Fund. . . . The House of Delegates authorized the Board of Trustees to pay "a liberal per diem allowance" to the President and President-elect in addition to expenses already authorized. . . . The Board of Trustees was encouraged to "consider the purchase of suitable property in Washington, D. C., to serve as a permanent headquarters for the Washington office." . . . The Board of Trustees will report on the treatment of non-service-connected disabilities in Veterans' Hospitals at the June meeting in Chicago . . . The resolution of Dr. Eugene F. Hoffman of California on "Congressional investigation of the teaching of collectivism in schools" was approved.

At the Fourth Annual Public Relations Conference the address of Dr. Cyrus W. Anderson of Denver on "Explaining those 'other' medical expenses" was enthusiastically received. "Cy" did a splendid job both in the delivery of his address and in the question period. Mr. Harvey T. Sethman, who, in addition to being our own Executive Secretary, is now Chairman of the Advisory Committee to the Department of Public Relations of the A.M.A., presided at the afternoon session on December 3, 1951.

The program of the Coordinating Committee presenting United States Senators Taft and Byrd, both of whom made excellent speeches, was a great success. A Los Angeles businessman remarked that he was undecided whether Senator Taft was a good Democrat or Senator Byrd a good Republican.

At a dinner given to the House of Delegates by the Los Angeles County Society we were royally dined and were entertained by Mr. Edgar Bergen with Charlie and Mortimer, by Mr. Jean Hersholt and Hawaiian dancers.

Congratulations and appreciation are due the Los Angeles County Society, especially the co-chairmen, Doctors J. W. Scott and L. Lafe Ludwig, Committee on Arrangements, for masterful and successful "staff" work.

Dr. A. C. Yoder, Goshen, Indiana, was elected General Practitioner of the Year.

GEORGE A. UNFUG,
WILLIAM H. HALLEY.

Original Articles

CRANIOCEREBRAL TRAUMA*

BASIC PRINCIPLES OF EXAMINATION AND CARE

ALEXANDER C. JOHNSON, M.D.
GREAT FALLS, MONTANA

Increasing incidence of head injuries as a natural sequence of increasing mechanization of our daily lives is well recognized. It is obvious that the vast majority of such cases of injury to the central nervous system, and to its membranes and bony encasement, must come under the care of the family doctor. Excellent detailed works pertaining to trauma of the central nervous system in all of its aspects, notably those of Brock and of Rowbotham, are available. All such treatises suffer from the common fault of being primarily written by and for the neurosurgeon and neurologist. Such volumes obviously do not readily yield basic information to the family doctor and are liable to create a disproportionate perspective of essential and non-essential features in the management of these cases. The writer, whose work is in the field of neurologic surgery, has been impressed with the frequent deviation from sound physiologic concepts in the management of head injuries.

The most important single observation to be made when confronted with the patient who has incurred cranial and intracranial trauma is his state of consciousness. There is no more reliable index of the degree of generalized brain injury, though this does not preclude the possibility of serious local injury as may be associated with comminuted depressed fractures, where the general concussive effects are often reduced by the localized fracture of the skull. His state of consciousness, as noted initially, then gives a base line from which one may estimate evidence of returning consciousness or deepening of coma.

It should not be forgotten that the patient may not have merely skull and brain injury, but that he may incur distant traumatic lesions simultaneously; and, therefore, the general condition of the patient, particularly the vital signs and evidence of shock, should be evaluated. In this latter regard it should be stressed that true shock is not a characteristic part of craniocerebral trauma, and when present can rarely be explained on the basis of the head injury. A shock-like condition has been described with some brain stem injuries; but in the author's experience surgical shock, when present in a head injury case, has nearly always been due to other injuries present. This feature is of vital importance and all too often serious visceral or other injuries are overlooked because of the assumption that the state of shock is due to the head injury. As a matter of fact, serious brain injuries are associated with physiologic changes which are actually the reverse of the picture of shock, the patient having a full, slow pulse, elevated blood pressure, deep stertorous respiration, and hot, flushed skin, in contradistinction to the well-known features of surgical shock. It follows then that a brief, but careful, examination of the chest, abdomen, spine, and long bones is indicated.

The really essentially features of the neurologic examination of significance in the initial evaluation of the head injury patient are unfortunately often either omitted or excluded in favor of a detailed elicitation of various reflexes. It goes without saying that the patient who has regained consciousness should be the subject of a full and detailed neurologic examination, but let us deal primarily with the unconscious patient. We have already observed his general condition and state of consciousness.

*Presented at a symposium on trauma at the U. S. Administration Hospital, Fort Harrison, Montana, April 19, 1951.

To be presented at the Scientific Session of the Interim meeting of the Montana State Medical Association, February 29, 1952.

During this time we have probably noted the presence or absence of any gross paralysis. Does the patient move about in bed and does he move both sides equally? If he does not move spontaneously does he respond to painful stimuli such as pinching the arm or leg? Facial paralysis can often be detected by pressure over the supraorbital nerve, producing grimacing. These reponses to painful stimuli also serve as an index of the profundity of coma in patients in whom there is no spontaneous movement. The head and cranial orifices should be examined, noting particularly the presence of blood in the external ear canals, which practically always indicates a petrous pyramid fracture, and the presence of any scalp lacerations or other evidence of local trauma. The spine should be inspected and palpated for gross deformity and due caution should be given always to the possibility of spine fracture in association with head injury. This is particularly noted in the so-called "Coleman's Syndrome" in which skeletal damage to the shoulder girdle, associated with head injury, is strongly suspicious of the possibility of a cervical spine injury.

The eyes should be examined for conjugate alignment and the size and equality of the pupils. Examination of the fundi is not necessary immediately as funduscopic changes are not to be expected initially, except in those cases of massive and rapidly fatal intracranial hemorrhage. Under no circumstances, and this should be emphasized, should any sort of mydriatic drug be used in examining the fundi of head injury cases, since this is not only unnecessary but destroys some of the most valuable neurologic findings. It is indeed the rare fundus that cannot be adequately examined without the use of mydriatics and in these rare cases it is preferable to preserve the pupillary responses rather than to examine the fundi.

A comparison of the common muscle stretch reflexes, the biceps and triceps in the upper extremity and the knee and ankle jerks in the lower extremity should be made and recorded. The plantar reflex should likewise be noted as to the presence or absence of the Babinski sign.

It is not unintended that the consideration of x-ray films of the spine and skull has been left to the last. To paraphrase the late and great Dr. Harvey Cushing, it is apparent that too much attention is paid to disturbance of bony continuity and too little to the disturbances of central nervous system physiology. This faulty thinking is emphasized in the common practice of referring to head injury as synonymous with skull fracture; while, as a matter of fact, there are no symptoms directly referrable to a fractured skull but only to the associated trauma to the underlying brain. With this in mind, it is then apparent that x-ray films are made only when the condition of the patient warrants, and under no circumstances should a critically injured patient be moved about for the purposes of obtaining x-ray films, which will have no bearing on the immediate management of his problem. When his condition has stabilized sufficiently to warrant x-ray films these should be made, using the best possible technic and obtaining at least the P. A. and Towne (occipital) positions and both lateral views. Films of poor diagnostic quality or an inadequate number of views to properly evaluate the pathology that might be disclosed are of little help.

Let us now turn to the initial orders that might be written in a case of serious craniocerebral injury, and the rationale of each. The blood pressure, pulse, and respiration should be determined at half-hourly intervals initially and recorded on a graph in order to follow changes in the vital signs. Let it suffice to say that a progressive slowing of respiratory and pulse rate, particularly associated with rising blood pressure and a rise in temperature, is classically characteristic of increasing intracranial pressure. These changes may not all be evident simultaneously. The nurses should be well instructed as to these facts, as uninformed nurses may assume that as long as the pulse is "strong" and the blood pressure "good," the patient is in satisfactory condition. His state of consciousness should be observed and the nurses likewise instructed to report immediately any progressive changes in vital signs and state of con-

sciousness, or the developing of inequality of the pupils, as well as the occurrence of vomiting or convulsions, all of which may be strongly indicative of an increase in intracranial pressure, as associated with certain surgical complications to be discussed subsequently. Too often the casual notation "resting quietly" in the nurses' notes actually indicates developing and unrecognized coma.

The head of the bed is elevated one-third, which decreases the intracranial venous pressure, and accordingly decreases the cerebrospinal fluid pressure. This also provides a greater pulmonary vital capacity. The patient should be turned completely from side to side at least every two hours and thoroughly suctioned, using a catheter of about No. 14 size with multiple holes in the end, and passing this catheter far down through each nostril into the region of the larynx and hypopharynx. If this stimulates coughing so much the better. After the first few hours the possibility of aggravating any intracranial hemorrhage in this manner is academic; and if an epidural or subdural hematoma is to develop, the groundwork has already been laid before this time. This writer is continually amazed that these simple and fundamental procedures in the care of an unconscious patient seem to be generally untaught in schools of nursing. A small pillow under one shoulder is thought to pass for turning the patient, and the removal of a small amount of saliva from the anterior part of the mouth with a tonsillectomy suction tip is little better than complete neglect. Where secretions are profuse postural drainage for fifteen or twenty minutes prior to suctioning is useful. Atropine is of too short duration to be really useful in this respect. In rare instances tracheotomy must be done. It is probably true that with the exception of unrecognized surgical complications, such as chronic subdural hematoma or brain abscess, most late fatalities from craniocerebral trauma are due to pulmonary complications arising from faulty nursing care.

In spite of the fact that every medical corpsman in the armed forces during the recent World War was thoroughly instructed not to use his morphine syrette in any casualty in which a head injury was present, morphine is still almost invariably and unfortunately used in civilian cases, at times even in semi-conscious or unconscious patients. At no time should morphine or any of the opiates be used because of the depression of respiration, which is often already severely compromised in head injury cases. The resultant increase in intracranial venous and cerebrospinal fluid pressure resulting from such respiratory depression, and the interference with pupillary light reflexes are dangerous secondary effects to be avoided. The only exception is the occasional case having severely painful injuries elsewhere, in which small doses of Demerol combined with barbiturate may be judiciously used, but never to the point of significant hypnosis or narcosis. Where possible, no sedation whatsoever is best, but in the occasional extremely restless patient small doses of sodium phenobarbital may be used intramuscularly, but again, never enough to produce somnolence. At all times it must be remembered that the state of consciousness is a primary index of the patient's condition, and nurses should be informed in this regard so that developing coma is not simply recorded in the nurses' notes as "sleeping quietly." If necessary bed rails and restraints of the extremities may be used where there is marked restlessness. It should be kept in mind that restlessness often indicates bladder distension in a patient not able to make his wants known. Catheterization is a safe "sedative" in such instances.

The question often arises as to the appropriate fluid intake in patients unconscious following craniocerebral trauma. It was once quite in vogue to drastically reduce fluid intake and even to administer purgatives, as well as quantities of hypertonic fluids by vein. It is often noted that where patients are subjected to such drastic dehydrating measures they may not only fail to show the desired improvement, but rather their condition may progressively worsen. The writer has seen such cases show immediate favorable changes following administration of restorative quantities

of fluids intravenously, resulting in a prompt fall in temperature, "lightening" state of consciousness, and generally improved appearance. It is this writer's opinion, and probably one shared by the majority of neurosurgeons, that an adequate fluid intake, on the order of 2,000 to 2,500 c.c. per twenty-four hours, is indicated; more in dehydrated or febrile cases. Patients under the writer's care receive this amount intravenously for the first two or three days (appropriate volumes in children), following which a Levine tube is inserted through the nose if it appears that prolonged unconsciousness is to be expected. Through this stomach tube the appropriate total volume of fluid is given, including a high vitamin liquid diet of about 2,000 calories, or higher if the temperature has been elevated. It is not felt that the use of hypertonic intravenous fluids is generally justified, except where additional time to prepare for emergency surgery in an acute compression syndrome (epidural or subdural clot) is necessary. This may shrink the brain sufficiently to postpone slightly the exact time of irreversible compression. The use of hypertonic fluids as part of routine treatment not only does not have quantitatively as much effect as generally thought; but furthermore, it has been well shown that the clinical diagnosis of posttraumatic cerebral edema does not necessarily coincide with this actual physiologic state, and therefore, hypertonic fluids might be administered in a case in which cerebral swelling is not the pathologic mechanism concerned. Since this writer only uses hypertonic fluids as a preoperative emergency measure, hypertonic (50 per cent) dextrose is the solution generally used. As surgical relief is anticipated the well-known secondary rise in cerebrospinal fluid pressure is of no moment. Under other circumstances hypertonic plasma or serum albumin may be preferable.

Hyperthermia may occur as a complication of brain injury in any degree from a very slight elevation of temperature to a progressive hyperpyrexia with fatal termination. Apparently the presence of blood in the cerebrospinal fluid may act as an irritant or otherwise as a disturbing influence on the thermal regulation of the body to produce of itself some degree of elevation of body temperature. With higher degrees of body temperature, and particularly the severe cases progressing to a fatal hyperpyrexia, the presence of significant damage to the heat regulatory centers of the hypothalamus may be presumed. This fact is well known from the occasional occurrence of hyperpyrexia following surgical intervention for tumors involving the region of the diencephalon, particularly suprasellar and third ventricular tumors. Generally speaking, the development of hyperthermia due to disturbance of central nervous regulation will be noted soon after the occurrence of trauma and any elevation of temperature first noted as long as twelve or eighteen hours after trauma should be regarded critically as likely due to other causes, particularly pulmonary complications. The treatment of the hyperthermia itself consists of measures aimed at increasing the loss of body heat and, in addition, measures to resist the catabolic effects of the elevated body temperature.

Covering the patient's body with damp towels seems to be the most effective method of lowering body temperature since the evaporation of this moisture requires a tremendous amount of heat. It is not necessary and in fact undesirable that the towels be cold as it is the evaporation of the water and not its temperature that is responsible for the loss of body heat effected. This is most effective where the skin temperature is elevated. Where there is a cutaneous vasoconstriction with a cold skin surface the application of these damp towels should be preceded by a brisk rub of the skin with tepid water and rough sponges or towels to induce vasodilatation. The effectiveness of this treatment may be increased by directing electric fans over the coverings of the patient to increase evaporation. Alcohol sponges are also useful and may be combined with brisk massage of the skin to increase cutaneous circulation. The writer is unimpressed with the effectiveness of ice bags since these usually produce a rather prompt cutaneous vaso-

constriction with increased retention of heat, sometimes greater than the amount lost in melting the ice by conduction.

The catabolic effects of hyperthermia are combatted by the use of an oxygen tent, primarily to supply the additional oxygen needed because of the elevated body metabolism, but also for some cooling effect by conduction, if the temperature of the tent is maintained at proper levels. The fluid intake should be increased sufficiently to keep urinary output and urine concentration within normal limits, and supplementary intravenous fluids or high-calorie tube feedings are desirable to supply additional caloric intake. These measures are useful in treating any excessive hyperthermia; though some cases of severe and irreversible hypothalamic damage will be found to respond little, if at all, to these or any other measures and generally terminate fatally.

A word should also be mentioned in regard to the use of lumbar puncture in head injuries. As this writer has pointed out in another article, the cerebrospinal fluid findings bear little relationship to the clinical management of the head injury patient. It is well known that while the cerebrospinal pressure is generally elevated following head injury it may be normal or low even in severe cases. Furthermore, the presence of a high spinal fluid pressure does not necessarily indicate the presence of an intracranial surgical lesion and occasionally a surgical lesion, particularly a chronic subdural hematoma, may be present without remarkable or even no elevation in spinal fluid pressure. The fluid itself may be clear to grossly bloody, and the degree of extravasation of blood into the cerebrospinal fluid likewise bears no direct relationship either to the seriousness of the injury nor to the proper management of the case. It should be again emphasized that the injudicious use of spinal puncture in the presence of an expanding intracranial lesion carries just as much, if not more, risk in the case of a post-traumatic hematoma as in a brain tumor. Greater adjustment of the brain to the more slowly expanding tumor is possible. Lumbar puncture in such cases may not only produce a rapid fatality in some instances, due to herniation of the cerebellar tonsils through the foramen magnum and the transtentorial herniation of the temporal lobe through the tentorial incisura compressing the brain stem; possibly more often the puncture produces only an accelleration of this train of events converting a favorable operable case, in a relatively short time, into one beyond surgical reversibility. While there is no entire agreement among neurosurgeons on the value of diagnostic lumbar puncture in head injuries, it seems to be rather well agreed that this procedure is of no therapeutic value in the form of repeated spinal drainage, as once advocated widely. The writer finds the principal value of lumbar puncture to be in those cases admitted to the hospital unconscious without adequate history, in which case lumbar puncture is only a part of the various studies, including blood sugar, n.p.n., etc., indicated in the differential diagnosis of unconsciousness.

Let us direct our attention now to the consideration of surgical principles. First, it should be realized that any person who has incurred a head injury, even an apparently minor injury, may develop a complication of urgent and grave surgical implications; therefore, such possibility must be considered in any head injury case showing progressive neurologic impairment and development of stupor or other evidence of increased intracranial pressure. One of the earliest signs may be the development of incontinence in a patient who previously was sufficiently rational to ask for the bed pan or urinal. Delay in surgery may result in the development of irreversible cerebral compression with fatality even after surgical evacuation of the hematoma; therefore, the suspicion of increasing intracranial pressure is adequate reason for immediate neurosurgical evaluation and intervention if indicated. There is no more distressing situation to the neurosurgeon than to receive a patient in decerebrate rigidity with terminal and irreversible cerebral compression as the result of a completely curable condition, such as a subdural or epidural clot, as a consequence of excessive delay for "observation" in the attempt to arrive at

a positive diagnosis. Particularly in the case of the epidural hematomas, which being generally of arterial (middle meningeal) origin are rapidly developing, the entire course of events from injury to fatal termination may be but very few hours. The mortality from this lesion today approaches if not exceeds 50 per cent, in large part from delay in surgery. Dramatic recoveries are to be expected in most cases where surgical intervention is undertaken early, provided there is not severe associated brain injury.

Compound skull fractures necessitate prompt surgical intervention for the same reason as compound fractures elsewhere, primarily to prevent infection. In addition, debridement of the underlying brain and meninges and the repair of the meninges is indicated to prevent infection and minimize cortical scar formation. This, however, does not apply to compound linear fractures except where foreign matter, such as hair, may be trapped in the suture line. The "all-or-none" rule should apply, and no superficial preliminary debridement or repair of the wound should be undertaken as this may only promote spread of latent infection. The entire procedure should be done at one session by one trained and equipped for major brain surgery, as such injuries are often more serious than the appearance of the x-ray films or the patient's condition might suggest.

Missile wounds, for practical purposes, may be considered as compound craniocerebral injuries to be managed with the same principles as other wounds of this group—essentially, complete definitive debridement, repair, and arrest of hemorrhage, as soon as the patient's condition permits. There are other considerations not within the scope of this paper. An operative mortality rate on the order of only 14 per cent from all theaters in World War II for such cases reaching neurosurgical units attests to the soundness of such management. While missile wounds of the brain are not common in civilian life, the writer believes the mortality rate in such cases is generally higher because of the erroneous conception of such wounds as "always fatal."

Cerebrospinal fluid fistulas may occur from the nose, the ears, or directly through a compound fracture. Those occurring through the nose are of the greatest direct significance since a spinal fluid leak occurring through a compound fracture will be simultaneously corrected with surgical repair of the fracture itself and the underlying meninges; while cerebrospinal fluid otorrhea is generally self-limiting, presumably because of the distance that this fluid must travel through the fractured petrous pyramid. Practically all cases of cerebrospinal otorrhea will stop spontaneously within a few days at the most and surgical intervention is but rarely required. The patient should be on intensive prophylactic chemotherapy, preferably of the sulfonamide drugs because of the greater levels obtained in the normal cerebrospinal fluid circulation. Cerebrospinal fluid rhinorrhea presents quite another problem. While many such cases do stop spontaneously, and initially are managed similarly to cases of cerebrospinal fluid otorrhea, the lack of any great bony barrier greatly facilitates the continuation of such a leak, since these leaks ordinarily occur through fractures into the frontal sinus or inferiorly into the cribriform plate and ethmoids. The patient should be forbidden from blowing his nose, coughing, and straining, since these actions increase the leak of fluid. A real and serious danger of meningitis, often fatal because of its mixed bacterial nature, is present in such cases. Prior to chemotherapy and the antibiotics it was desirable in such cases to wait not more than a few days before surgical intervention. At the present time even with the aid of our potent antibacterial agents it seems highly dangerous to wait more than a week before considering surgical intervention with repair of the meningeal laceration and its fistulous connection. The presence of intracerebral air is pathognomonic of this condition even where there has been no recognizable cerebrospinal fluid leak, which may be intermittent and of a degree not recognized by the patient.

A word should be mentioned in regard to exploratory burr openings or "inspection holes," as termed by Rowbotham. There

are many cases in which evidence of serious generalized brain injury makes the evaluation of a developing surgical lesion difficult, and in such cases rather than delay further, exploratory trephine openings may be made under local anesthesia (a procedure of ten or fifteen minutes time) with no detriment to the patient in the event of negative findings. Such a procedure may result in early removal of a not clearly recognized hematoma. The safety of this procedure should be emphasized since all too often the patient's family and physician consent to such surgery with misgivings or dangerous delay only because of the erroneous idea of long, serious, and hazardous surgery.

A question which often arises here in the West, where distances to neurosurgical attention are great, is the matter of transportation. The experience of the recent war conclusively showed that head injury cases may be transported quite well, provided there are not severe associated injuries with resultant shock. After shock is treated in the usual manner and the vital signs have become stabilized, these patients can then be moved readily. Whether transported by airplane or ambulance, nurse attendance and the availability of oxygen is highly desirable, the latter particularly in patients being transported by air. It should be noted in this regard that time is of the essence and the patient, whose life may be saved by prompt surgery, will be no better for delay and indeed may reach such moribund condition that transportation is out of the question. When a patient has reached such a state surgery will usually be of no avail. As a general rule it may be stated that the patient with a neurosurgical emergency will get no better by delay, and if suitable for surgery at all he is generally also suitable for transportation. The writer believes that such a patient, not yet in moribund condition, can be moved with relative safety. It is not to the patient's advantage that the neurosurgeon be brought to the patient to attempt major neurosurgical intervention in an unfamiliar hospital with an untrained operating team. The time lost not only will be greater and the surgery more hazardous but, in addition, the patient must be then deprived of the postoperative observation of the neurosurgeon.

Summary

The management of craniocerebral trauma cases consists of the initial evaluation of the patient, including his general condition, the presence of other injuries in addition to the head injury, the treatment of shock if present (and the recognition that this is nearly always not due to the head injury, but must be explained by other injuries to be sought for in the examination), and a brief neurologic evaluation to include evidence of paralysis, head and cranial orifices, ocular position and pupillary size and equality, and the equality of the reflexes and presence of pathologic reflexes. The follow-up and care then consists of a careful evaluation of the state of consciousness, neurologic and vital signs at frequent intervals, maintenance of normal pulmonary aeriation and prevention of pulmonary complications, and prompt neurosurgical attention where indicated.

NEW TYPE OF INTERNSHIP

Beginning July 1, 1952, a new type of internship will be offered in Colorado, sponsored by the participating private Denver hospitals and the University of Colorado School of Medicine. The new Community Hospitals Internship will be tried for one year and if it proves successful, it may become a regular part of the training of young physicians in this area. It will be in addition to the regular Denver General Hospital internship which has been offered for many years and which will remain essentially unchanged.

In the new internship, the young physician in training will spend six months at Denver General Hospital and six months at one of the private participating hospitals in Denver. It is expected that this plan will better utilize the unique teaching material available in private hospitals, will offer the intern a broader exposure to different viewpoints and technics in the practice of medicine, and will provide a better distribution of internship services to meet the community needs for both private and indigent patients. It will offer the young physician an opportunity for experience in private hospital practice.

In addition to the usual ward assignments, the intern will also spend part time in the newly established General Practice Clinic during his six months at Denver General Hospital.

The new Community Hospitals Internship has been approved by the Council on Medical Education and Hospitals of the American Medical Association and also by the National Interassociation Committee on Internships. This is the first instance in this country of an internship combining equal experience in private and public hospitals. If successful, it may well become a pattern for internships in other parts of the country.

MEDICINE'S OPPORTUNITY OF A LIFETIME*

ERVIN A. HINDS, M.D.

We were just getting back to living like human beings again following World War II when right out of the clear, the precursors of World War III poke their ugly heads. We have been caught frustrated, angry, confused, deeply disappointed and badly off balance. Our national thinking got snarled up with uncertainty and alarm. Like frightened animals many people started biting at each other. But it seems to me that we, as doctors, are living in one of the most exciting and interesting periods of medical history—and I don't mean medical history from only the viewpoint of scientific achievement. I mean that this is the most interesting time in all history from at least three viewpoints—scientific, economic and political.

We are thankful that medicine as a profession abandoned the sidelines right after World War II and got into all three of these activities, whereas before it had taken part in only one—the parade of scientific progress. Now that medicine has limbered up its economic and political muscles, it has really come of age in civic affairs—and that is why I say that medicine has an opportunity of a lifetime, particularly in the next few years.

It was not long ago that Dr. Elmer Henderson, then President of the A.M.A., observed: "American medicine has come a long way in a short time." He was referring primarily to the economic and political awareness that doctors and medical societies have developed in the period since Oscar Ewing's now notorious meeting in Washington in 1948 which he called the National Health Assembly. You will recall that his so-called National Health Assembly had been framed in advance, which made the recent basketball fixers look like pikers. When his assembly adjourned, it had failed to deliver medicine into Oscar Ewing's hands as he had planned. So he and his cohorts re-wrote and re-worded the supposed report of the conference which, you will recall, also declared war against medical free enterprise.

Medicine accepted the challenge and all of us, through our American Medical Association, started a national educational campaign to carry our political battle right to the people. Most of the doctors in the country took part personally. Most county medical societies worked hard. Almost every state medical society, certainly including our own—did excellent jobs. So did many allied organizations and individuals. And in this three-year period, medicine has found many friends which it did not know it had.

One of the turning points in this war was the 1950 general election. And when I say "war," I mean exactly that, because it has been, it is, and it will continue to be a war of survival for free enterprise. Many aspects other than the medical aspects of this war came to a focus at the 1950 general election which, as we now all know, resulted in a great victory for those who believe in free enterprise. This activity has given us all a prominence in civic affairs that we have never had before. This again points up my theme that medicine has, right now, its opportunity of a lifetime. Our recently acquired civic and political prominence gives medicine the opportunity to recapture that leadership. Certainly these opportunities include leadership in our communities, in our community political affairs, in the conduct of our civic organizations—in fact, in every aspect of modern life.

If we want to make the most of these opportunities, we must go on with renewed vigor, not only in support of our scientific and professional standards, not only in support of our belief in free enterprise throughout American life, but in support of the hundreds of projects that arise in our daily life that help the average citizen of our country to a high standard of living and a better appreciation of America. It means more devotion to our medical societies and our civic enterprises—it means

*Read at the Eleventh Annual Western Colorado Springs Clinic, Grand Junction, Colorado, April 1, 1951.

that every doctor must devote a little more time to his professional community and to his civic community than he has done in the past. Putting it another way, it means devoting more interest to our fellowman—and a little less to ourselves.

Freedom is the most important heritage we have. It always presupposes, however, a personal acceptance of responsibility. If a people will not assume this individual responsibility they will eventually lose their freedom. Anyone who selfishly violates the moral law in the field of business, the professions or labor, thereby threatens our freedom. Man must either control himself from within or eventually he will be controlled from without. To remain free, we must be responsible men.

You see, if I have made myself clear, I am trying to explain to you why I believe medicine, the individual doctor, the county society, the state society, and the A.M.A.—medicine as a whole—has the opportunity within the next two or three years to lead the thinking of this nation of ours. If we accept this opportunity and exploit it properly, medicine may change the history of our nation at the general election in 1952. It is my belief that on that date we will either start the long road back to the kind of government and kind of free enterprise that made this country great, or else we will slip further into the quicksands of socialism.

To grasp this opportunity we must have clean hands. We must do more than render lip service to our ethics and our moral standards. In plain language, what I mean is that any doctor who is guilty of overcharging, of overtreatment, or of neglect of patients must be controlled, disciplined and, if necessary, must be removed from our midst. We must give the best medical care of which we are capable to all the people, and we must do so at a cost which each person can afford to pay. We cannot wait about cleaning our own house. We have made a good start, but we must move faster because every time any doctor imposes upon a patient, another voter is ready to exchange free enterprise for the sugar-coated nostrum of a bureaucrat. Remember that with the critical international situation as it is, the bureaucrats are intensifying their efforts to get control of all free enterprise, including medicine, by labeling every one of their proposals as "emergency measures in the interests of national defense." Thus we have no time to waste.

Not only must we have clean hands, but we must all pull together. Up to now, medicine has always kept its organization in a most democratic manner, and it should ever remain so. Those like myself, however, who have found themselves temporarily in a position of leadership, wish that in developing these opportunities, more doctors would take part in the preliminary discussions, in the meetings of their county medical societies, in discussions with their delegates, in meetings of committees and boards. If they would express their ideas before decisions are made, decisions probably would be wiser; however, once committees and boards have made their recommendations, and houses of delegates have considered them and arrived at decisions, policies thus made should be considered binding upon all of us. Let's all take part in making our medical policy decisions. Then let's really pull together and gain that leadership I have tried to describe to you.

Every one of us can start on this road in our own offices, when we see our first patient tomorrow. Every one of us can keep everlastingly at it, bearing in mind that we honestly deserve the opportunity of a lifetime to help keep our nation great. What every one of us does from today forward will either increase or lessen that opportunity. Each of us has the confidence of a sufficient number of people, and, fortunately, we have strong medical organizations, local, state and national, to carry on that part of it. A few years ago, you pulled off your coats and doubled up your fists and decided to make a fight of it. The first two or three rounds are over with and we are stronger than when we began. Now, let's finish the job.

PREVENTION OF POSTOPERATIVE PULMONARY INFECTIONS*

BY INHALATION OF MICRONIZED PENICILLIN

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Pulmonary infection is still a fairly common postoperative complication in spite of advances in our knowledge of anesthesia and postoperative care. The use of antibiotic agents such as penicillin has reduced the seriousness and mortality of pulmonary infection but considerable morbidity is still attributable to this complication. The use of penicillin in a micropulverized form administered by inhalation pre-operatively has been reported in a previous article by Taplin, Cohen and Mahoney. This preliminary investigation indicated that postoperative pulmonary infection was greatly reduced by prophylactic penicillin administered by inhalation. Intramuscular penicillin did not seem to exert a comparable beneficial effect. The purpose of this report is to summarize recent experience and to further amplify the rationale for the use of micronized penicillin in the light of recent experimental data.

Methods and Materials

Using the type of operation as the sole criterion for selection, 150 cases were chosen for study at the Strong Memorial and Rochester Municipal Hospitals during the period July, 1949, to February, 1950. A deliberate attempt was made to select those cases wherein postoperative pulmonary infections were most likely to occur, i.e., upper abdominal cases such as vagotomies, cholecystectomies and gastrectomies, and thoracic cases such as thoracotomies, lobectomies, and pneumonectomies. Included in this group were seventy-seven males and seventy-three females, the average age being 50.8 years.

The day before operation, a nasopharyngeal culture was taken, plated for penicillin sensitivity and 200,000 units of micronized penicillin given by inhalation. The day of operation, 100,000 units were given before operation and 100,000 units after operation when the patient had reacted sufficiently to cooperate; 100,000 units were given each day for the first two postoperative days and on the third day, another nasopharyngeal culture was taken and the penicillin sensitivity of the flora again determined.

The distribution of the cases according to type of operation appears in Table 1.

TABLE 1

Type of Operation and Distribution of Pulmonary Complications

Type of Operation—	Number of Cases	Complications
Gastrectomy	27	3
Cholecystectomy	20	1
Transthoracic sympathectomy	30	1
Colectomy	12	0
Thoracotomy	10	1
Resection sigmoid	9	0
Vagotomy	8	0
Pneumonectomy	5	1
Lobectomy	5	1
Exploration common duct	4	0
Exploratory laparotomy	4	0
Lumbar sympathectomy	3	0
Abdominoperineal resection	3	0
Hernia	2	0

One case of splenectomy, diaphragmatic hernia, nephrectomy, Meckel's diverticulum, vulvectomy, ventral herniorrhaphy and thyroidectomy.

In classifying postoperative pulmonary infections, three groups were recognized. First, the patients who had a cough, occasional scattered moist râles, a mild temperature elevation and no x-ray evidence of atelectasis or consolidation, were said to have bronchitis. Second, those patients who were found to have a moderate elevation in pulse or respiratory rate and on physical examination were found to have a shift of the trachea, either absent or broncho-vesicular breath sounds with râles, mild

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fever and x-ray evidence of atelectasis were classified as having atelectasis. Third, those patients who had any or all of the above signs and symptoms plus a fever and x-ray evidence of an inflammatory infiltration were classified as having broncho-pneumonia.

Results

In the 150 cases studied there were eight cases in whom postoperative pulmonary infections were encountered. Of these cases there were seven patients who had atelectasis and one case of bronchopneumonia. This is a complication rate of 5.3 per cent for the series. Contrary to the findings of other investigators, there were almost twice as many males as females who had infections, the relative percentages being 6.8 per cent and 3.9 per cent, respectively. The average age of the group with complications was 46 years. These results appear in Table 2 along with fifty-one previous cases reported from this hospital. Included for comparison are three series of control groups selected at random from previous years and forty cases given aerosol penicillin prophylactically. In all, 236 control cases showed a remarkably constant incidence of postoperative respiratory infection from year to year averaging 19 per cent; 201 cases treated prophylactically with micronized penicillin had a complication rate of 4.5 per cent. The control series were selected insofar as possible to include comparable operative, seasonal, and age groups.

The results of the bacteriological study appear in Table 3. The high degree of penicillin sensitivity of the common organisms of the nose and throat as well as their disappearance following micronized penicillin is evident. The low incidence of pneumococci is probably a result of the bacterial technics utilized rather than being representative of the true carrier incidence of the population, which according to some investigators may be as high as 50 per cent. In determining the latter figure, serial cultures, throat washings, and reculturing of numerous colonies was done, which undoubtedly would uncover a number of isolated colonies of pneumococci that would be overgrown or missed by the usual methods. It is interesting that the case in this series from which pneumococci were isolated was the only case of bronchopneumonia encountered.

In the administration of any drug to a large number of persons the question of sensitization always arises. Careful examination of the patients given micronized penicillin was carried out for evidence of sensitization and no instance of urticaria, pruritis, dermatitis, arthralgia, rhinitis, or asthma which could be attributed to the drug was found. In three cases, or 2 per cent, a mild stomatitis was noted, consisting of superficial small mucosal ulcers over the buccal and pharyngeal mucous membranes, which in no case necessitated discontinuance of the penicillin and in every case disappeared rapidly following cessation of

TABLE 2

Incidence of Postoperative Pulmonary Complications

No. of Cases	Dates	Pre- or Postoperative Micronized Penicillin	Postoperative Pulmonary Complications: Bronchitis	Broncho-pneumonia	Atelectasis Without Pneumonia	Total No. Cases	Complications Pct.
50	Feb., March '47	None	2	4	3	9	18
50	June, July '47	None	1	7	2	10	20
96	Nov. '47-April '48	None	3	11	3	18	18.7
40	April, May '48	Atomizer or Aerosol Penicillin	0	8	0	8	20
51	May, July '48	Micronized Penicillin	1	0	0	1	2
150	July '49-Feb. '50	Micronized Penicillin	0	1	7	9	5.3

Over-all Averages (1948-1950).		Per Cent Complications
Without micronized penicillin	236	19
With micronized penicillin	201	4.5

therapy. Eight cases having two-stage procedures, such as sympathectomy, received micronized penicillin twice at intervals of from one to six months and in none of these was a reaction noted during the second period of administration.

Though probably not on a sensitivity basis, 6 per cent of cases reported transient nausea while inhaling the penicillin. It is interesting that all cases of nausea and stomatitis occurred in non-smokers who represented a relatively small percentage of the total number of cases.

Discussion

Comparing and evaluating statistics on postoperative pulmonary infections is always difficult, due to the variations in "respiratory awareness," and the technics of observation and classification. Various investigators have reported series with complication rates from 2 to 69 per cent. King emphasizes that the greater the interest in this condition and the more it is studied, the greater will be the number of cases diagnosed. In this series of cases an attempt was made to eliminate as many variables as possible by having the same individual check the pulmonary status of all patients pre- and postoperatively and record the complications on the basis of his findings. All cases of infection were proved by positive x-ray findings, as were suspicious cases eliminated by negative x-rays.

That the basis of postoperative pulmonary infections is atelectasis has been shown by many investigators, notably Coryllos and Birnbaum and later Mousel. The pathogenesis of atelectasis is described as follows: A mucous plug obstructs a bronchus, the air in the lobe supplied by that bronchus is rapidly absorbed, and collapse occurs. Bacteria in the trapped secretions rapidly invade the collapsed segment and bronchopneumonia follows. Recent studies by Baarsma and Dirken on collateral ventilation have shed much light on the mechanism of such collapse, which is applicable in arriving at a rational basis for the prevention of postoperative atelectasis and pulmonary infections. These investigators found by experimental studies in rabbits and clinical observations in man that occulsion of the main bronchus to a lobe regularly produced atelectasis. Occlusion of a bronchus beyond the first primary division of the main bronchus to a lobe did not produce atelectasis in healthy subjects. The reason given for this phenomena is that collateral ventilation from the surrounding lobules which are supplied by unobstructed branches of the primary main bronchus occurs via the interalveolar pores of Kohn, thus preventing collapse. It was found that this collateral ventilation may amount to as much as 60 per cent of the volume normally supplied by the bronchial ramus to the pulmonary lobule. That these pores were not fissures of tissue or artifacts was demonstrated by special fixation technics in which the pores were visualized and by inference in that the permeability of such communications did not increase with increasing pressure and were open at even the most minute pressure differences. Most important to the problem at hand is that it was found with occulsion of a secondary bronchus, that atelectasis occurred only when collateral ventilation was eliminated (1) by shallow breathing, or (2) by the development of an inflammatory process in the unobstructed portion of the lobe. In the first case the communications or pores are obliterated by simple collapse and in the second case by the occurrence of in-

TABLE 3

Organism—	No. Cases Pre-Operatively	Sensitive Pct.	Present Postoperatively
Strep. viridans	88	100	5
N. catarrhalis	49	96	5
Diptheriods	30	100	3
S. albus hemolyticus	31	100	4
S. aureus hemolyticus	20	95	4
Parainfluenzae hemolyticus	16	100	1
Yeast	14	0	21
B. aerogenes	8	0	33
E. coli	10	0	47
B. proteus	2	0	4
Non-hemolytic strep	2	100	0
Strep. hemolyticus	2	100	1
H. influenzae	2	50	0
B. Friedlander	0	0	4
B. alkaligenes	0	0	3
B. pyocyaneus	0	0	20
Pn. pneumoniae	0	0	1

creased secretions and inflammatory edema.

From this it follows that the prevention of postoperative pulmonary infection should be directed toward:

1. Reduction of bronchial secretions by methods such as elimination of pre-existing infections, bronchial drainage, proper premedication, intra-tracheal anesthesia, smooth induction, and postoperative endotracheal suction.

2. Elimination of shallow breathing by methods such as re-breathing with carbogen mixture, frequent change of position, early ambulation, proper analgesia and suction to avoid abdominal distention.

3. Reduction of infection and elimination of pathogenic organisms in nose, throat and lungs by methods such as the inhalation of micronized penicillin. Micronized penicillin by inhalation seems best suited for the potentially atelectatic operative case by virtue of its concentrated local action. Numerous workers have demonstrated a progressive impairment of the circulation in a region of atelectasis, which, when coupled with the presence of infected secretions in the alveoli, would reduce the efficiency of a systemic agent such as intramuscular penicillin. Nebulized or aerosol penicillin has been disappointing in the studies of Findlay and of Holborow as well as in our small group of cases listed in Table 2. This is perhaps due to the fact that it is more rapidly absorbed from the alveoli, giving a less sustained local action than the particulate micronized penicillin. It is probable that the alveolar distribution of aerosol penicillin is less complete, due to the difficulty in controlling the inhaled droplet size, the larger droplets being deposited in the mouth and pharynx.

It should be stressed that the respiratory complications encountered in this series of cases were mild in character and did not in any instance appreciably alter the postoperative course of the patient. The one case of bronchopneumonia was in an individual with chronic basilar infection whose operation of vagotomy had been postponed previously due to this condition. He had a temperature of 39°C. which subsided in twenty-four hours and he left the hospital on his tenth postoperative day. Four of the cases of atelectasis had fever of 38.5°C. and were turned and vigorously percussed with dislodgement of the mucous plug and a resulting fall in temperature and respiratory rate. The remaining three cases of atelectasis were entirely asymptomatic and the condition noted only on routine physical examination of the chest. No case required bronchoscopy.

Summary

1. A series of 150 thoracic and upper abdominal operative cases were given micronized penicillin by inhalation pre-operatively and postoperatively in an attempt to prevent postoperative pulmonary infections.

2. There were eight complications including one case of bronchopneumonia and seven cases of atelectasis for an over-all morbidity of 5.3 per cent. This compares with a complication rate of 19 per cent in a series of untreated cases at this hospital.

3. Atelectasis is the primary cause of postoperative pulmonary infection. Collateral ventilation prevents the development of atelectasis except in the presence of shallow breathing or pulmonary inflammation.

4. Shallow breathing may be eliminated by established methods.

5. Micronized penicillin by inhalation is an agent of considerable value in the reduction of pulmonary inflammation when used prophylactically in the operative case.

6. Micronized forms of some of the newer antibiotics which are active against the gram-negative organisms may further extend the usefulness of this method.

CONGENITAL ATRESIA OF THE BILE DUCTS

WITH REPORT OF A CASE

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Reports published in the medical literature indicate that congenital atresia of the bile ducts is not common. Only 200 cases were noted in the American Medical Literature by Motsay and May when they submitted their report in 1945. At the New York Babies Hospital there were only sixteen cases in about 21,000 admissions, according to the study of Donovan. Keller and Nute analyzed the data at the St. Louis Children's Hospital and found the incidence to be only six cases in 24,441 autopsies. However, it is believed that many cases die each year, sometimes without diagnosis and often without adequate exploration.

Etiological Factors

Any explanation for the development of anomaly of the bile passages is inadequate. Certain interesting facts, however, are known. Both intra-hepatic and extra-hepatic bile ducts are formed by evagination of the foregut. During the early stages they constitute solid cords of cells. By degeneration of the central cells the lumen is eventually developed. When this process of central degeneration fails to develop, congenital anomalies result. The reports of Ladd, Holmes and of Stolkind disclose that atresia of the bile ducts may occur anywhere in the extra-hepatic portion of these structures. There are a few authentic cases, Mclendon and Graham, Parsons and Hickman, where sections of the liver show that the intra-hepatic ducts are so mal-developed that intra-hepatic biliary atresia occurs with obstruction.

Pathological Findings

According to Moore, the general variations found at autopsy or operation may be placed in the following categories: (1) patients in whom there are no demonstrable extra-hepatic ducts, (2) patients in whom there is atresia of the hepatic ducts, (3) patients in whom there is atresia of the common duct, (4) patients in whom the gallbladder is represented by a moderate-sized cystic space not connected with the common duct, and (5) patients in whom the gallbladder connects directly with the duodenum, but in whom there are no other extra-hepatic ducts. If a child lives any appreciable length of time after birth there is invariably found an obstructive biliary cirrhosis of the liver. This organ, in a fairly advanced case, is enlarged and quite uniformly nodular. Associated acites and splenomegaly of varying degree is present.

Microscopic Pathology

There is proliferation of the intra-hepatic bile ducts. They are dilated and many of them contain accumulations of inspissated dark greenish-brown bile. There is extensive proliferation about the periportal regions of connective tissue. Phagocytic cells are usually numerous and filled with particles of concentrated bile. The usual microscopic picture is quite uniform and distinguishable from other forms of liver cirrhosis.

Clinical Features

These babies develop progressive jaundice that begins soon after they are born. The urine is dark and the stools clay-colored or white from the beginning. They usually show adequate weight-gain and their general nutritional status remains good in spite of the jaundice for several weeks. Bleeding tendencies develop late in children with congenital atresia of the bile ducts and can be avoided by giving parenteral vitamin K.

Deep jaundice is the most prominent physical finding. A prominent abdomen with visibly dilated veins gradually develops. The liver becomes palpable and, as the case advances, the spleen also becomes palpable. Acites can be demonstrated in the older children.

The laboratory findings are those of a complete, progressive, obstructive jaundice. The most reliable test is the constant absence of urobilinogen from the urine, or its pres-

ence only in traces. The icterus index or serum bilirubin reach very high values. The Van Den Bergh reaction is of the direct type. There are no bile pigments in the stools but they are extremely concentrated in the urine. In late cases, liver function tests will show decreased function. All cases should be operated on long before there is detectable liver damage.

Differential Diagnosis

Icterus neonatorum, sometimes called physiological jaundice of the newborn, may at first be confused with congenital atresia of the bile ducts. However, this condition clears readily, beginning with the first day of birth, while the jaundice of biliary atresia steadily deepens and may not be detected until a few days after birth. Complete obstructive jaundice is present, with acholic stools, etc., in individuals with biliary atresia, while in incterus neonatorum the jaundice is of the hemolytic type.

The jaundice of erithroblastosis fetalis may, for transient periods (Davidsohn), be of the complete obstructive type. However, the presence of anemia, erthroblastemia and the usual downhill course will serve to differentiate this disease quite easily in most cases. Observations with proper study for a few days will uncover the exact nature of this disease.

Jaundice in infants with a severe bacteremia often results either from hemolysis of red blood cells or from extensive destruction of liver parenchyma. Such patients, for brief periods, may present a similar clinical picture to that of congenital atresia of the bile ducts. The former patients show the usual evidence of severe infection, viz., fever, leucocystosis, toxicity, and prostration. They are unlikely to have complete obstructive jaundice and if they do it is only for short periods.

With the modern management of syphilis and the routine practice of obtaining prenatal serology, congenital syphilis no longer offers a differential diagnostic problem.

Treatment

Early surgical exploration is the only form of treatment that offers any hope for a normal span of life to these infants. Exploration of the anomalous extra-hepatic biliary system is necessary. This requires a detailed dissection of the porta hepatis well into the hilum of the liver. Resection of a portion of the liver in search of a suitable duct for anastamosis or for the establishment of a biliary fistula should be done when no suitable remnant of the extrahepatic biliary system is present. The type of reconstructive procedure that is done will be dictated by the findings at operation. A general principle can be stated—that it is desirable to restore as nearly as possible the usual anatomical arrangement and physiological function of the normal individual.

CASE PRESENTATION

This infant was admitted to the St. Louis Children's Hospital, St. Louis, Missouri, on May 8, 1950. The history was taken from the parents and it is considered reliable:

Chief complaint: Jaundice since birth.

Present illness: The patient is an eight-week-old child that was born following a normal pregnancy and delivery in Montgomery City, Missouri. Labor was thirteen hours in duration. At birth it was noticed that the child's conjunctivae were yellow and since that time there has been a progression of generalized jaundice. The father noticed that the urine is always deep yellow and he states that the stools are chalk-white and hard. The baby has three to four bowel movements a day. With each bowel movement he screams as if he were in pain. He eats well and is on a 2:1 evaporated milk and water formula, six times a day. However, the baby frequently vomits his food ten to thirty minutes after eating. The vomitus is usually undigested food but never contains bile. The mother states that if one gently squeezes the baby's abdomen he screams as if in pain. In fact, the baby cries most of the day. Despite all this, the baby gained from five pounds and eleven ounces to eight and an half pounds since birth.

Family history: The mother and father are both 21 years old and have always been in excellent health. There is no family history of cardiac, renal, or pulmonary disease or of biliary tract disease. The mother has never received blood transfusion. They do not know their Rh status.

Physical Examination: The patient is an irritable, hungry, malnourished white male infant who does not appear acutely ill. Normal pulse, temperature and respiration. Skin is lemon-yellow; the conjunctivae are even deeper yellow. There are no scratch marks on the skin. No petechiae or ecchymoses are found. Mucous membranes are slightly pale despite the icterus.

Pupils react to light. The nose and throat are negative. Neck is supple with no adenopathy. Lungs, clear to percussion and auscultation. Heart tones are good and the rhythm is regular. No murmurs are heard. The abdomen is distended, with bowel pattern that is visible at times. The baby vomited twice during the drawing of blood. The vomitus contained no bile. The liver is two and a half finger-breadths below the infra-costal line. The spleen is not pal-

pable. Extremities show no gross deformities. The right testis is twice as large as the left and somewhat firmer (hydrocele?). Reflexes are physiological. Urine: There is a deep yellow-orange stain on the diaper. Stool, pale chalky and solid.

Clinical Impression: Congenital atresia of the extra-hepatic bile ducts.

Admission Laboratory Data:

BBC—4,400,000
HB—8.7 grams
WBC—9,400
Bleeding time—45 seconds
Clotting time—2 minutes
Prothrombin time—Upper limits of normal
Total proteins—5.25 grams
Albumen—3.88 grams
Globulin—1.38 grams
Cepholin flocculation—Negative
Icterus index—70 units
Blood culture—No growth
Alkaline phosphatase—29 units
RBC fragility—Normal
Stool—Clay-colored—No bilirubin
Urine—Bilirubin positive
No urobilinogen
Otherwise negative
Blood type—A—Rh—Negative
Kahn—Negative

Fluoroscopy of the chest was negative.

X-ray findings: AP and lateral of abdomen showed no x-ray abnormalities.

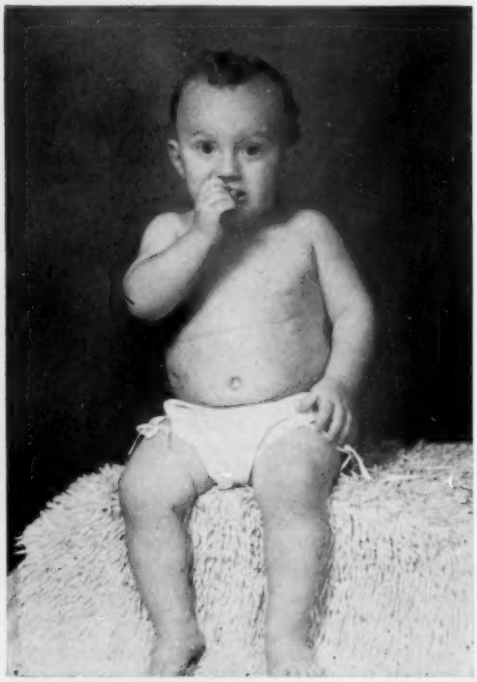

Fig. 1. Healthy child at 18 months—14 months after surgery.

Most of the laboratory studies were repeated preoperatively and found essentially as given above. Whole blood was given until the hemoglobin was within high normal limits.

On May 17, 1950, an exploratory laparotomy was done. The usual diffuse cirrhosis of the liver was encountered, with a moderate amount of acites. The spleen was enlarged about four times normal. There was no communication of the extra-hepatic bile ducts with the gastro intestinal tract. The gallbladder was a tiny cord-like structure 3 millimeters in diameter and 3½ cm. long. It joined a common hepatic duct that ended blindly with no evidence of a common bile duct.

The duodenum was mobilized and the thick-walled end of the hepatic duct stump was anastomosed to the first portion of the duodenum. A tiny polythene tube was left in the tubular gallbladder and brought out with a drain through a right upper quadrant stab wound. A liver biopsy was taken.

Gross Pathology: 50-2286 consists of three portions. No. 1 consists of specimen used for frozen section which is an irregular wedge of liver tissue approximately 1x1½x1 cm. This is greenish in color and shows fairly normal liver architecture grossly. No. 2 consists of more liver tissue, another pyramidal wedge about 2x1x1 cm. The specimen looks similar to specimen No. 1. Specimen No. 3 consists of a cyst-like structure, approximately 2x2 cm. when flattened out and less than 1 mm. thick. It is almost transparent. This is very filmy, said to be a liver cyst. Sections were made for microscopic study and labeled 1, 2, and 3, respectively. All for section. Jar O. (Bernard).

Microscopic Pathology: Sections show portal fibrosis and proliferation of bile ducts with a few ducts dilated and filled with bile. Section 3 shows a fibrous cyst wall.

Postoperative Course: The patient had an uneventful postoperative course. Light yellow bile drained from the plastic tube until it was clamped on the second postoperative day. The icterus index rapidly returned to normal and the stools took on the usual color. A cholangiogram on the sixth postoperative day showed dye to readily pass into the duodenum. The patient was discharged on the fourteenth postoperative day and has been clinically normal since.

The photograph (Fig. 1) shows the child at age 18 months, 14 months after the operation.

Discussion

Anomalies of the extra-hepatic bile passages occur often enough to warrant familiarity of the clinical picture by all who are in the practice of medicine. Although such patients need not be considered as surgical emergencies it is important to make an early diagnosis and to see that the proper management is undertaken. The indication for laporatomy with thorough exploration of the anomalous biliary system is clear in all cases. It is noteworthy that anomalies of the bile ducts are often associated with other developmental anomalies, especially, of the heart. More than one case has been reported in a single family.

Case Report

NEW DRUGS IN THE TREATMENT OF KERATITIS

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For considerably more than a year, cortisone has been used topically in the eye, especially in infections of the anterior segment. Many successes have been described in several articles. So little understood are the actions of the steroids that it is impossible to evaluate the result of treatment on any selected case. Disease processes which appear similar clinically will confound us, some by responding to cortisone promptly and efficiently, and others showing absolutely no improvement.

Almost nothing has been written about the combined use of cortisone drops and antibiotic drops in the eye. From the absence of any worthwhile knowledge concerning this form of treatment, one might even wonder whether cortisone and the antibiotics are compatible. However, the following case history indicates that they are.

CASE HISTORY

Dr. H. M. H. was seen August 29, 1951, at about 5 p.m. with a painfully inflamed right eye of several days duration. The left eye was normal. The history given indicated that the infection had started August 25 and was progressively growing worse. He reported that he had used "a couple of drops of cortisone and one or two drops of aureomycin" during this period.

Examination revealed a deep, solid, gray-white area 3 mm. in diameter in the center of the cornea. It strained intensely with fluorescein as seen with the bio-microscope. The epithelium over this area was gone, yet the lesion showed no crater-like concavity so typical of corneal ulcer. Around the lesion, tiny and faintly staining, were pin-head punctate spots of infiltration, perhaps half a dozen in number. These were suggestive of the asterisk-like lesions noted in epidemic kerato-conjunctivitis. The larger lesion appeared to extend through the deepest layers of the cornea. Large lattice-like folds of Descemet's membrane were noted. The pupil was small and mobile. No keratic precipitates were seen, nor was there any haze in the anterior chamber. There was slight edema of the entire corneal epithelium. In addition, the eye showed all concomitants of severe keratitis such as chemosis, ciliary injection, etc. The vision was 20/150.

I made a tentative diagnosis of disciform keratitis.

Course: Since all bacteriological laboratories were closed, it was decided to start treatment at once without further diagnostic aid. Cortisone drops (Schering's Cortogen) were used, two in the eye every hour. At the same time two drops of aureomycin (Lederle) were also instilled. Atropine sulphate eye drops were given at once, and hot compresses advised fifteen minutes out of every hour. Between treatments the eye was patched. Chloromycetin (chloramphenicol), 250 mg., was given by mouth every four hours.

The cortisone and aureomycin drops were given five times prior to the patient's retiring. Upon arising at 5 a.m. the drops were again started and were continued hourly until I saw the patient the following morning at 10 a.m. To my amazement, on examining the eye with a strong light and using the loop, I could see no evidence of a corneal lesion. In fact, except for the pupillary dilatation, the casual observer would have pronounced the eye normal. Upon staining. With Fluorescein I detected a microscopically thin broken line of green staining in the epithelium as the only remaining evidence that the eye had been severely affected. The vision was 20/25 corrected.

Discussion

In my years of practice as an ophthalmologist, I can state that this practical recovery in approximately seventeen hours of severe keratitis was as surprising and dramatic as anything I have ever encountered. Such a condition before the advent or cortisone and antibiotics ordinarily would have taken weeks and months to recover. No one can say whether any one of the three drugs, chloromycetin, aureomycin or cortisone, was chiefly responsible for curing this patient. My inclination is to believe that all three probably helped. Ample proof exists that cortisone drops and aureomycin drops used separately are often amazingly efficient in combatting corneal infections. Recent investigative work also indicates that chloromycetin orally penetrates into the eye better than any other antibiotic. Therefore, there is no reason to believe that all three drugs were not partially responsible for this cure.

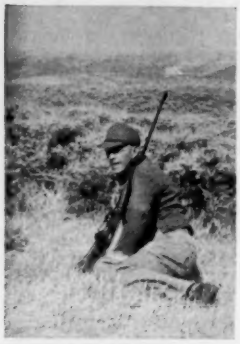
It is regrettable that we do not have sufficient cases to evaluate each of these drugs separately. Until we do, or until further information is available, I feel that we are obligated to use the most efficient and powerful drugs we have, even if done in a shotgun manner, especially when they produce such rapid and amazing cures as they have done in this case.

Organization

This Is Late, but Too Good to Miss!

Most magazines and medical journals would abhor the thought of publishing as news something that happened six months ago.

But when there comes to light pictorial proof that the President of the American Medical Association was caught with his aim down—on a Wyoming antelope hunt last September—we think this bit of humor makes news even the following February.



Prexy goes a-hunting: "Wonder if this is a sufficiently dignified squat for a President of the A.M.A., but—Why!—there's one of those pronghorn things they're talking about, now — yes, guess he's in range."

"This business of using a borrowed rifle—how the h— does this bolt work? Oh, 'tisn't a bolt at all—lever action—should have had a cartridge in the chamber ahead of time —well, here goes..."

"! ?-!& (@!*) ?@% (** ?? @@) ()!*()... missed the !*@??..." (the remaining quotes are censored by Order of the Committee on Blood Pressure).*

History records that Dr. John W. Cline of San Francisco was the honor guest at the Annual Session of the Wyoming State Medical Society in Rock Springs in September, 1951. Wyoming doctors arranged a post-meeting antelope hunt just north of Rock Springs, for him and other guests, including Drs. Walter Freeman of Washington, D. C., and Ralph Stuck of Denver. Later they reported a good time was had by all, but no antelope were bagged.

Now it develops that Dr. Freeman was a candid camera fan and throughout some crucial moments of the hunt was stationed close to President Cline. Later he sent prints to Dr. Stuck, who lent them to your Editors. Neither Freeman nor Stuck vouch for the scientific accuracy of the quotes accompanying our reproductions, but the general idea is there!

COLORADO
State Medical Society

Component Societies Elect New Officers

Many of the County and District Medical Societies in Colorado choose and install their new officers each January, although others elect or install at other times of the year. Since so many still change administrations at the beginning of each calendar year, February and the annual Directory Issue is a good time to list them. Current officers of component societies as reported to the State Society's Executive Office are:

Arapahoe County—John Simon, Jr., President; P. W. Hogan, Secretary.

Boulder County—Harry Jones, President; Roy Wolfe, President-elect; B. E. Peterson, Secretary.

Chaffee County—C. Rex Fuller, President; E. C. Budd, Secretary.

Clear Creek County—G. E. Mason, President; L. H. Goad, Secretary.

Delta County—J. H. Humphries, President; Woodrow Brown, Vice President; R. A. Underwood, Secretary.

Denver County—Kenneth C. Sawyer, President; James M. Perkins, Secretary.

Eastern Colorado—H. M. Hayes, President; Jerome L. Keefe, Secretary.

El Paso County—Irving H. Schwab, President; J. W. McMullen, Treasurer and President-Elect; Vernon Bolton, Vice President; E. C. Crouch, Secretary.

Fremont County—Neill B. McGrath; President; Lawrence C. Perry, Vice President; G. C. Christie, Secretary.

Garfield County—Paul J. White, President; Patience Noecker, Secretary.

Huerfano County—P. G. Mathews, President James M. Lamme, Jr., Secretary.

Lake County—V. E. Kelley, President; Robert Anderson, Secretary.

now in parenteral form...

BANTHĪNE®

Bromide

Brand of Methantheline Bromide

for use when oral administration is difficult or impractical —when more prompt action is desired

Banthine—a true anticholinergic drug with an adequate range of safety—is now made available to the medical profession in parenteral form, for use intravenously or intramuscularly in those conditions characterized by nausea and vomiting, when oral medication cannot be retained and when a prompt action is desirable.

Through its anticholinergic effects, Banthine inhibits excess vagal stimulation and controls hypermotility.

In Peptic Ulcer —the value of the oral form of Banthine is now well established. However, edema in the ulcer area may indicate parenteral Banthine until the healing processes have reduced the edema.

In Pancreatitis —it has been found that parenteral Banthine relieves pain, effects a fall in blood amylase and produces a general improvement in the patient's condition.

In Visceral Spasm —it inhibits motility of the gastrointestinal and urinary tracts.

Parenteral BANTHĪNE is supplied in serum-type ampuls containing 50 mg. of Banthine powder. Adult dosage is generally the same as with Banthine tablets.

ACCEPTED COUNCIL ON PHARMACY AND CHEMISTRY AMERICAN MEDICAL ASSOCIATION

RESEARCH IN THE SERVICE OF MEDICINE **SEARLE**

Larimer County—E. Minor Morrill, President; Blair Adams, Vice President; William F. Powers, Secretary.

Las Animas County—David Barglow, President; J. E. Donnelly, Secretary.

Mesa County—Edwin R. Orr, President; R. F. Hall, Secretary.

Montrose County—T. O. Plummer, President; Ross D. Luther, Secretary.

Morgan County—V. E. Wohlauer, President; L. C. Lusby, Vice President; F. E. Roark, Secretary.

Northeastern Colorado—H. P. Linton, President; Kenneth H. Beebe, Secretary.

Northwestern Colorado—F. E. Willett, President; Ligon Price, Secretary.

Otero County—John A. McDonough, President; W. R. Sisson, Secretary.

Prowers County—C. T. Knuckey, President; Edwin C. Likes, Secretary.

Pueblo County—J. H. Woodbridge, President; F. G. Tice, Jr., Secretary; Clifford F. Bramer, Treasurer.

San Juan Basin—Edward G. Merritt, President; J. G. McKinley, Secretary.

San Luis Valley—W. S. Keyting, President; C. F. Knobbe, Secretary.

Washington-Yuma Counties—C. J. Bennett, President; P. D. Keller, Secretary.

Weld County—H. E. Haymond, President; F. J. T. Roukema, Secretary.

Component Societies

NORTHEAST COLORADO

Mr. John Vance of Denver, Executive Director of Colorado Medical Service, Inc., the Blue Shield organization, was guest speaker at the January meeting of the Northeast Colorado Medical Society held January 10, 1952, at the Sterling Country Club. He explained studies now under way toward possible future development of a new service contract, under procedures outlined by the House of Delegates of the State Society last September, and answered questions from the members regarding operations of the Blue Shield plan. The next meeting of the Society will be held in Ovid on February 14.

EL PASO COUNTY

Dr. M. F. Schafer gave a comprehensive review of the functions of the various departments comprising the City-County Health Unit of El Paso County and Colorado Springs at the January 9 meeting of the El Paso County Medical Society. At this meeting applications were filed by four prospective new members, Drs. Will P. Pirkey, R. E. Meatheringham, John C. Hays, and D. Joseph Budge.

Obituaries

SOLOMON S. KAUVAR, M.D.

Dr. Solomon S. Kauvar was born in Denver, Colorado, July 30, 1910, and died December 25, 1951, after an intermittant and protracted illness due to a brain tumor. He received his medical education at the University of Chicago and was licensed to practice medicine in Colorado in 1936.

His specialty was internal medicine for which he had had excellent preparation at the University of Chicago and graduate work in New York City. He also had graduate work in Wilhelmena Hospital, Amsterdam, Holland.

He was a man of strong personality and thorough scientific training for his special field of practice. The service for which he was most widely known was as Chairman of the Denver Health and Hospital Board, appointed by Mayor Newton in 1948. His service was the initiation of the more progressive efforts along the line of medical education and public health by Denver General Hospital.

His death so early in life was considered a great loss to the practice of medicine in Denver and Colorado.

CHARLES W. KESTLE, M.D.

Dr. Kestle was born in Cripple Creek, Colorado, May 21, 1907, and was educated in the University of Colorado School of Medicine, where he received his degree of Doctor of Medicine on June 15, 1931. He received his Bachelor's Degree from the University of Denver.

In 1931 he was licensed to practice medicine in Colorado and practiced in Cripple Creek until 1932.

Dr. Kestle will be remembered as an associate of the well-known Drs. W. B. and Alexander Craig, Denver, with whom he practiced until he opened an office for himself.

In 1945 he moved to Pueblo and became a member of the Pueblo County Society. He left Colorado in 1949 and was located in Stockton, California, until the time of his death.

EMMETT VANCE GRAHAM, M.D.

Dr. Graham was born in Lee County, Virginia, on December 19, 1870, and died in Denver, Colorado, on January 17, 1952. He graduated at Emory and Henry College and the Kentucky School of Medicine and received his degree to practice in 1902. He came to Colorado Springs in the same year and moved to Denver in 1904, where he interested himself in mining activities in and about Silver Plume. He later moved to Breckenridge in 1931.

Among the things of greatest interest of his life were his activities as a country doctor in Summit County during World War I and his faithfulness to the duties as an examiner for the draft board in this sparsely settled section of the state.

In 1920 and 1921, Dr. Graham did graduate work in gynecology and obstetrics at the University of Pennsylvania, after which time he devoted himself more or less to this specialty in Denver. He was a member of the Denver County, State, and American Medical Associations.

ROBERT LEE OWENS, M.D.

Dr. Robert Lee Owens, an honorary member of the El Paso County Medical Society, died on November 22, 1951, in Lubbock, Texas. Born in Dwarf, Kentucky, on August 4, 1880, he received his medical degree in 1906 from the Hospital College of Medicine of the University of Louisville.

He had practiced in Texas and had served in World War I when he came to Colorado Springs for his health in 1920. For twenty years he

carried on part-time practice, limiting his work to dermatology. His health finally forced his retirement in 1942 and he made his home in Texas till the time of his death.

Dr. Owens is survived by his widow and one son.

PUEBLO CLINICS

FRIDAY, APRIL 4, 1952

9:00-10:30 A.M.—Registration, Minnequa University Club.

Morning Session

Dr. J. H. Woodbridge, Presiding Chairman

10:25—Welcoming Address.—Dr. L. L. Ward.

10:30-10:45—Nasal Obstruction in Every-Day Practice.—Dr. Andrew E. Demshki, Jr.

10:45-11:05—Virus Pneumonia.—Dr. John W. Gardner.

11:05-11:15—Discussion—Opened by Dr. R. D. Schilling.

11:15-11:30—Carcinoma of the Throat.—Dr. Albert McC. Tipple.

11:30-11:40—Discussion—Opened by Dr. Wm. D. Grant.

12:00-2:00—Recess.

Afternoon Session

Dr. Frederick G. Tice, Jr., Presiding Chairman

2:00-2:20—Total Hysterectomy for Benign Uterine Condition.—Dr. Scott A. Gale.

2:20-2:30—Discussion—Opened by Dr. Jesse W. White.

2:30-2:50—Baby's First Year.—Dr. John Yeager.

2:50-3:00—Discussion—Opened by Dr. Ray Taylor, Jr.

3:00-3:30—Recess to view exhibits.

3:30-3:50—Hernia—Newer Aspects of Repair.—Dr. George P. Cribari.

3:50-4:00—Discussion—Opened by Dr. Eugene B. Ley.

4:00-4:20—Bladder Complications and Care Following Surgical Procedures in General.—Dr. William C. Shontz.

4:20-4:30—Discussion—Opened by Dr. George M. Meyers.

4:30-5:30—Review of exhibits.

Evening Session

6:30—Preview, Lounge.

7:00—Dinner, Dining Room.

"Office Gynecology"—Dr. Walter J. Reich, Guest Speaker.

WYOMING
State Medical Society

News Notes

The Wyoming State Medical Society will hold its Annual Session in Lander on June 5, 6, and 7, 1952. The scientific meetings and exhibitors will be at the State Armory Building in Lander and the hotel headquarters will be the Noble Hotel in Lander.

COLORADO
State Health Department

MATERNAL GESTATION CALCULATORS AVAILABLE

Recently the Maternal and Child Health Section of the Colorado State Department of Public Health has received a limited number of special cardboard "slide-rules" from the U. S. Public Health Service and Children's Bureau. These are being distributed to all Colorado hospitals to assist physicians in the accurate reporting of length of pregnancy in weeks on the birth certificate.

Although most authorities agree that the birth weight is the most reliable single index of maturity, the recent emphasis on accurate recording of birth weight on all birth certificates should not be interpreted as implying that information on the length of gestation is no longer of importance. The latter is extremely valuable to physicians and health departments concerned with the reduction of infant mortality, immunity (prematurity) and related problems of the newborn.

A recent pamphlet* issued by the National Office of Vital Statistics makes the following comments regarding length of pregnancy: "For statistical purposes, period of gestation is defined as 'the number of completed weeks that have elapsed between the first day of the last menstrual period and the date of birth of the child.' It is recognized that there are cases where the exact date of the mother's last menstrual period cannot be determined accurately. However, the bias introduced by such errors will be relatively minor. From a statistical standpoint, the important factor is the consistent application of the definition on the basis of the best available evidence.

"At the present time, important innaccuracies are evident in gestational information derived from birth records. These arise principally from difficulties in computing length of pregnancy in weeks, and are reflected in the statistics by extreme heaping at thirty-six and forty weeks and a minor bias toward other even weeks. The heaping at thirty-six weeks is the result of incorrectly converting nine calendar months (full-term gestation age) into weeks by considering four weeks the equivalent of a month. Heavy concentrations at forty weeks are indicative in part of a failure to calculate period of gestation for the newborn infants who seem to be normally developed."

All Colorado physicians are urged to give this matter their thoughtful attention. The gestational calculators are offered as a means of simplifying and standardizing the procedure.

*Recommendations for Developing Comparable Statistics on Prematurely Born Infants and Neonatal Mortality—National Office of Vital Statistics and the U. S. Public Health Service, Children's Bureau.

The technics used in tuberculosis control among the Indians parallel those among non-Indians and are flexible enough to be changed as accepted methods are improved. However, additional methods of attack are used that are not now considered necessary in the general population, such as the wide-scale use of BCG vaccine.—H. DeLien, M.D., and Arthur W. Dahlstrom, M.D., Am. J. Pub. Health, May, 1951.

from among
all antibiotics,
Neurologists and Neurosurgeons
often choose

AUREOMYCIN

because

It readily passes into the cerebrospinal fluid, the presence of meningitis making little difference in its concentration.

Measurable serum levels are maintained for as long as 12 hours after oral administration, oral doses of 5 to 10 mg. per kilo at 6-hour intervals being adequate for this purpose.

Aureomycin has been shown to be highly effective against those bacterial invaders commonly encountered in central nervous system infections.

Aureomycin has been reported to be effective against susceptible organisms in: Brain Abscess • Cranial Trauma Infection • Encephalitis • Meningitis

Throughout the world,
as in the United States,
aureomycin is recognized as a
broad spectrum antibiotic
of established effectiveness.

Capsules: 50 mg.—Bottles of 25 and 100; 250 mg.—Bottles of 16 and 100. *Ophthalmic:* Vials of 25 mg. with dropper; solution prepared by adding 5 cc. of distilled water.

LEDERLE LABORATORIES DIVISION
AMERICAN CYANAMID COMPANY
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COLORADO

Medical School Notes

Dr. Ward Darley, Director of the University of Colorado Medical Center, has been appointed to the National Advisory Mental Health Council, a council of twelve members which reviews all applications for research grants in its field from the U. S. Public Health Service. Announcement was made January 22 by Surgeon General Leonard A. Scheele in Washington.

The University of Colorado School of Medicine is pioneering a new trail in postgraduate medical education. It is sending twelve members of its faculty to Cheyenne, Wyoming, where they will conduct a series of twelve lectures designed to bring family doctors in Wyoming up-to-date on the latest medical advances.

The course is the first ever conducted by the school outside of Colorado. It is being co-sponsored by the C. U. Office of Graduate and Postgraduate Medical Education and the Wyoming Chapter of the American Academy of General Practice. Lectures will be held weekly from 7:30 p.m. to 9:30 p.m. every Wednesday in the Veterans' Administration Hospital in Cheyenne. The course consists of: February 20—"Diagnosis and Management of Diabetes and Diabetic Coma," by Dr. Robert W. Gordon; "Frequent Errors in Gynecological Surgery," by Dr. E. Stewart Taylor. February 27—"Diagnosis of Common Chest Conditions, Plus Recognition of Some of the Less Common Conditions," by Dr. Robert S. Liggett; "Treatment of Fractures by General Practitioners," by Dr. John T. Jacobs. March 5—"Management of Ulcerations of the Gastro-Intestinal Tract," by Dr. Frank B. McGlone; "Initial and Follow-Up Treatment of Severe Burns," by Dr. Mordant E. Peck. March 12 — "Recognition of Complicating Factors in Pregnancy," by Dr. Freeman H. Longwell; "Diagnosis of Common Neurological Conditions," by Dr. G. Milton Shy. March 19 — "Treatment of Hernia, Inguinal, Umbilical and Post-Operative, With Discussion of the Use of the Silver Wire Screen," by Dr. Edgar W. Barber; "Fluid Balance in the Very Ill Patient, Surgical and Medical," by Dr. MacDonald Wood. March 26—"Surgical Treatment of Vascular Lesions of the Lower Extremities," by Dr. Henry Swan II; "Anesthesia, Use of Sodium Pentothal, Curare, N20 and 02, Maintaining Blood Pressure at Normal Levels," by Dr. Robert W. Virtue.

The course actually is a practical review for general practitioners. The instructors, in addition to being faculty members, all are in active practice. The courses will be approved for twelve hours of credit by the Wyoming Chapter of General Practice.

WINTER AND SPRING POSTGRADUATE COURSES, 1952

Make Your Plans in Advance

Internal Medicine for General Practitioners: March 20, 21, 22, 1952—This is a practical course devoted to recent advances in diagnosis and treatment of common medical diseases. Emphasis will be placed on individual bedside and conference case discussions of selected patients from the wards in Colorado General and Denver Gen-

All Children Can Benefit from *this* Protective Hot Drink at Breakfast

In its widely distributed leaflet No. 268, "Eat a Good Breakfast," the U. S. Dept. of Agriculture states: "Summer or winter, there's something hot, as a rule, in a good breakfast.... Something hot is cheering and tones up the whole digestive route."

The problem of encouraging children to eat an adequately protective breakfast finds easier solution when Ovaltine in hot milk is recommended as a breakfast beverage. Many children clamor for a hot drink at the morning meal, and hot Ovaltine is the right kind of drink to recommend.

A cup of hot Ovaltine makes an excellent contribution of virtually all essential nutrients, adding substantially to the nutritional start for the day. It also serves in a gustatory capacity by enhancing the appeal of breakfast and making other foods more inviting.

The nutrient contribution made by a cup of Ovaltine is apparent from the table below. Note the wealth of essentials added to the nutritional intake by making the simple recommendation of adding a cup of hot Ovaltine to the child's breakfast.

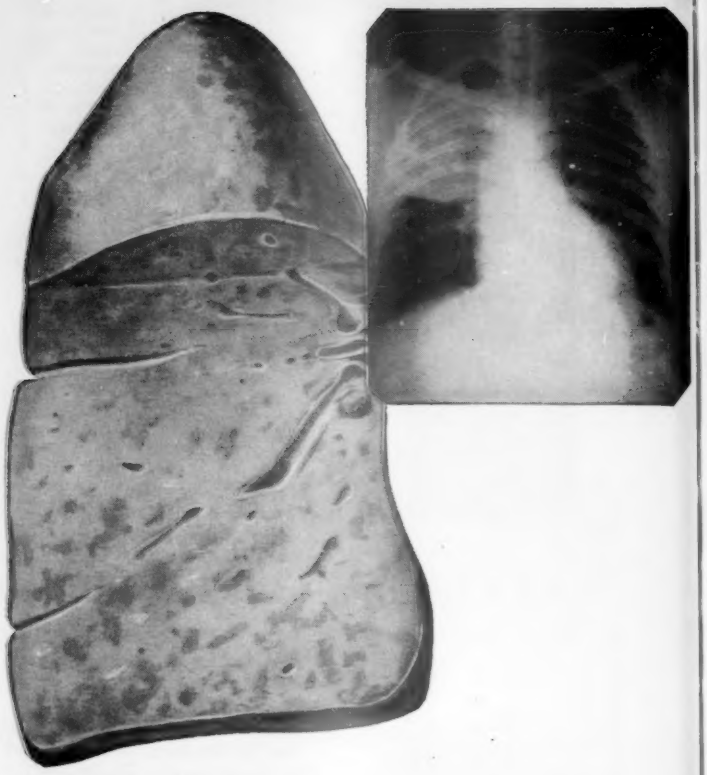
THE WANDER COMPANY, 360 N. MICHIGAN AVE., CHICAGO 1, ILLINOIS

Ovaltine

Here are the nutrients that a cupful of hot Ovaltine, made of ½ oz. of Ovaltine and 8 fl. oz. of whole milk,* provides:

PROTEIN	10.5 Gm.	IRON	4 mg.	NIACIN	2.3 mg.
FAT	10.5 Gm.	COPPER	0.2 mg.	VITAMIN C	10 mg.
CARBOHYDRATE	22 Gm.	VITAMIN A	1000 I.U.	VITAMIN D	140 I.U.
CALCIUM	370 mg.	VITAMIN B_1	0.39 mg.	CALORIES	225
PHOSPHORUS	315 mg.	RIBOFLAVIN	0.7 mg.		

*Based on average reported values for milk.



in lobar pneumonia:

The prompt response to Terramycin therapy in lobar pneumonia is consistent with results obtained in primary atypical pneumonia, bronchopneumonia and many other infections of the respiratory tract. In a typical series of pediatric cases, Terramycin-treated, "temperatures returned to normal in 24 to 48 hours after therapy was begun. The clinical appearance of marked improvement took place during the same period."

Potterfield, T. G., and Starkweather, G. A.: J. Philadelphia General Hosp. 2:6 (Jan.) 1951

ANTIBIOTIC DIVISION Pfizer

Terramycin is also indicated in a wide range of

Terramycin

GRAM-POSITIVE BACTERIAL INFECTIONS

Lobar pneumonia • Mixed bacterial pneumonias
Bacteremia and septicemia
Acute follicular tonsillitis
Septic sore throat • Pharyngitis
Acute and chronic otitis media
Acute bronchitis • Laryngotracheitis
Tracheobronchitis • Sinusitis
Chronic bronchiectasis
Pulmonary infections associated with pancreatic insufficiency
Scarlet fever • Urinary tract infections
Acute and subacute purulent conjunctivitis
Acute catarrhal conjunctivitis
Chronic blepharoconjunctivitis not involving the meibomian gland
Abscesses • Cellulitis
Furunculosis • Impetigo
Infections secondary to Acne vulgaris
Erysipelas • Peritonitis

GRAM-NEGATIVE BACTERIAL INFECTIONS

Gonorrhea • Brucellosis
Bacteremia and septicemia
Friedländer's pneumonia
Mixed bacterial pneumonias
Pertussis • Diffuse bronchopneumonia
Post-partum endometritis • Granuloma inguinale
Dysentery • Urinary tract infections
Respiratory tract infections
Cellulitis • Peritonitis • Tularemia

SPIROCHETAL INFECTIONS

Syphilis • Yaws • Vincent's infection

RICKETTSIAL INFECTIONS

Epidemic typhus • Murine typhus
Scrub typhus • Rickettsialpox
Q fever • Rocky Mountain spotted fever

VIRAL INFECTIONS

Primary atypical pneumonia (virus pneumonia)
Lymphogranuloma venereum • Trachoma

PROTOZOAL INFECTIONS

Amebiasis

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OPHTHALMIC SOLUTION

CHAS. PFIZER & CO., INC., *Brooklyn 6, N. Y.*

eral Hospitals. Professor Gordon Meiklejohn and Staff. Enrollment limited to twenty-five students.

Gynecology, Obstetrics, and Related Problems of the Newborn: April 10, 11, 12, 1952—This three-day refresher course will be high-lighted by four prominent guest lecturers, Prof. Emil G. Holmstrom, University of Utah; Prof. William C. Keettel, University of Iowa; Prof. Gilbert J. Vosburgh, Western Reserve University, and one guest pediatrician. These men, together with the faculty of the University of Colorado, form a teaching team of outstanding authorities. Time will be set aside for general discussion and questions where there can be a free exchange of ideas by the participants in the course.

Poliomyelitis: May 1, 2, 3, 1952—This course is planned to review the diagnosis and management of patients with poliomyelitis. This disease presents an increasing medical problem and every physician is called upon to answer questions and advise patients and their families concerning this disease. The instructors in this course have had wide experience in managing poliomyelitis cases during the recent outbreak in Colorado.

Traumatic and Emergency Surgery: May 19 and 20, 1952—This course is for both general practitioners and specialists and will include discussions in fractures, burns, shock, antibiotics, and other drugs, transfusions, and acute abdominal conditions. This course is designed to review recent developments of these various subjects by lectures, demonstrations and non-operative clinics. The basic anatomical and physiological principles underlying these subjects will be emphasized.

Psychiatry for General Practitioners: June 26, 27, 28, 1952—This course aims to present prevalent psychiatric concomitants in general medicine. Emphasis will be placed on psychotherapy and adequate time will be provided for discussion. Guest lecturer will be Dr. William T. Shanahan, Professor of Psychiatry, University of Texas, Galveston.

Applied Medical Science Courses: January 2 through June 9, 1952—This is a regular full-time course designed to orient the graduate student in the basic sciences required for certification in the various American Specialty Boards. The following part-time courses may be arranged: Surgical Pathology, two one-half days weekly from March 24 through June 9. This will be a systematic review of surgical pathology with emphasis on the more common lesions and each system will be covered as completely as the time allows. Surgical Anatomy, four one-half days weekly from March 24 through June 9. This course is planned to be of special interest to physicians who are preparing for specialty boards. Electrocardiography, a two-hour lecture, 7:30 to 9:30 each Thursday evening beginning January 17 through March 13. Dr. Abe Ravin. Biophysics, every Monday, beginning January 14 through February 18, 7:00 to 9:00 p.m. Industrial Medicine, every Tuesday, beginning January 22 through March 11, 9:00 to 10:30 p.m.

Are you keeping up with rapid advances in medicine? These courses are designed to help you. For further details and registration write to Postgraduate Education, University of Colorado School of Medicine, 4200 East Ninth Avenue, Denver, Colorado. The above courses will be held at the University of Colorado Medical Center, Denver.

NEW MEXICO
Medical Society

Obituaries

IRA L. PEAVY, M.D.

Dr. Ira L. Peavy, Santa Fe, died December 25, 1951, at his home following a lingering illness. At the time of his death Dr. Peavy was Director of the Venereal Disease Division of the State Department of Public Health.

Dr. Peavy was born June 14, 1889, and graduated from the University of Colorado in 1924.

A veteran Colorado and New Mexico physician, Dr. Peavy had been with the Health Department some ten years, with time out between 1945 and 1947 for work with the Colorado Fuel and Iron Company at Valdez, Colorado. Before that time he was with the St. Louis Rocky Mountain Fuel Company in Raton. He joined the State Health Department in 1942 as V-D clinician in District 6 at Carlsbad.

After returning from Colorado in May, 1947, he assumed a similar post in Las Vegas and later in Santa Fe, he became head of the division on February 1, 1951. He was a member of San Miguel County Medical Society, the New Mexico Medical Society, and the American Medical Association.

C. LEROY BROCK, M.D.

Dr. C. Leroy Brock, Albuquerque, died January 5, 1952, after a long illness. Dr. Brock had practiced in Albuquerque for thirty years, and practiced in Espanola prior to that time.

He was born in 1884 and graduated from Georgetown University in 1911. He was a member of Hope Lodge No. 20, A. F. & A. M., of Washington, D. C., the Scottish Rite Bodies at Santa Fe, and Ballut Abyad Temple Shrine of Albuquerque, and of the Episcopal Church. He was a member of Bernalillo County Medical Society, the New Mexico Medical Society, to which he was elected an Emeritus Member in 1950, and of the American Medical Association.

BLUE CROSS
and
BLUE SHIELD

RESULTS OF SENATE SURVEY

A Senate Subcommittee, under the chairmanship of Herbert H. Lehman, former Governor of New York, has recently completed a study of Health Insurance Plans in the United States. A summary of the report is published by the Spectator, Property Insurance Review[1], for September, 1951, and here we present a summary of this summary. Some of the figures go back a year or two, since the study has been under way for considerable time.

The number of people carrying health insurance in the United States is 75 million—about one-half of the population. Blue Cross protects 37 million[2], Blue Shield 18 million[2], insurance companies 34 million. There is some duplication

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A clinical record stretching over 17 years of use in a wide variety of procedures . . . 1803 reports published in medical journals throughout the civilized world . . . this is the background PENTOTHAL Sodium offers today's anesthesiologist. Through the years, the Abbott-discovered ultra-short-acting barbiturate has become virtually synonymous with intravenous anesthesia. For good reasons. There is a rapid, pleasant induction, complete surgical amnesia. The patient usually awakens without nausea. With PENTOTHAL, the explosion hazard is eliminated, the equipment simple and easily stored. When individual requirement warrants, PENTOTHAL may be combined with any number of other anesthetics. Investigate the full potentialities of PENTOTHAL in minor and major surgery—and in obstetrics—by writing Abbott Laboratories, North Chicago, Illinois, for detailed literature. Abbott

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. . . supplied in 10-cc. and 20-cc. vials, each cc. representing 3 mg. of tubocurarine chloride pentahydrate. Also 1-cc. ampoules, 15 mg. Ask for literature.

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FOR INTRAVENOUS ANESTHESIA

since 31 million people carry both hospital and surgical insurance. Between three and four million carry relatively complete insurance. Blue Cross pays 70-80 per cent of the hospital bill for which they are responsible; the insurance companies pay 45-55 per cent. Blue Shield pays 67-75 per cent of surgical and medical expense; the insurance companies pay 46 per cent.

Subscription payments to Blue Cross in 1949 amounted to 303 million dollars; to Blue Shield 79 million; to insurance companies and independent plans 373 million. These are merely insurance payments; the total spent in 1949 for health services exceeded 10 billion dollars. According to the Senate report employers pay about one-half of the premiums in insurance plans under collective bargaining agreements.

Government funds provide 71 per cent of hospital beds, many of these beds taking care of chronically ill patients. State governments provide 45 per cent of these beds, the federal government 13 per cent, local governments likewise 13 per cent. One-fourth of patients admitted to hospitals enter government institutions.

Activities of the federal government include free medical care to veterans, grants to states for infant care, community inoculations, water and food inspection, free milk for grade schools, etc. State activities include the operation of hospitals, maintenance of public health departments, sanitation, venereal disease control, industrial safety, etc. Local governments usually make contact with patients and they operate hospitals and employ physicians, dentists, and nurses. In these activities they receive financial support from state and federal agencies.

Over 4.5 million persons are on the rolls of public relief agencies, the break-down running as follows: Aged, 2,625,594; dependent children, 1,365,813; blind, 89,301; general relief, 461,000. The cost of this relief in 1949 was 2,234 million dollars.

According to the American Medical Association the average cost of illness requiring hospitalization is $285. Of this sum $131 is allocated to the hospital; $109 to the physician; $10 to special nursing care; and $14 to incidental items.

This minimal summary will show the general nature of the Senate Subcommittee's report. It appears that the study was made for purposes of information rather than propaganda but it may be anticipated that the findings of the report will yield to diverse interpretations.

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[1]The Spectator, Chestnut and 56th Streets, Philadelphia, Pennsylvania.
[2]Currently 43 million.
[3]Currently 21 million.

The Book Corner

Book Reviews

Syllabus of Human Neoplasms: By R. M. Mulligan, M.D., Professor of Pathology in the University of Colorado School of Medicine; with 230 illustrations; Lea & Febiger, Philadelphia, 1951. Price, $7.50.

The authoritative impression which the reader gains from the preface of this book maintains throughout. No verbosity is encountered; descriptions are terse and exact.

The eleven chapters are divided in simple, logical fashion with general ideas and definitions making up the first. The latest concepts regarding epithelial neoplasms of skin and appendages are found in Chapter II. Chapter III treats of neoplasms of mesenchymal origin. The fourth chapter is very well done and has to do with neoplasms of neuroectodermal origin, and removes the old veil of uncertainty from discussion of these tumors. Chapters V, VI, VII, VIII, IX, and X are concerned with neoplasms of the alimentary tract, respiratory tract, urinary tract, male genitalia, female genitalia, and endocrine glands. Unusual neoplasms are described in Chapter XI and in the Supplement.

The bibliography at the end of each chapter is made up of references to recent literature for the most part and is gratifyingly complete.

Illustrations are numerous, appear characteristic, and still different from the ones usually found in pathology text books. Many of these illustrations are excellent.

Pathologists will welcome this up-to-date book to their reference libraries. It will prove valuable to surgeons and to all physicians interested in tumors.

FRANCES McCONNELL, M.D.

A Textbook on Medicine: Edited by Russell L. Cecil, M.D., Sc.D., Professor of Clinical Medicine Emeritus, Cornell University, New York; Robert F. Loeb, M.D., Bard Professor of Medicine, Columbia University, New York; Associate Editors, Alexander B. Gutman, M.D., Professor of Medicine, Columbia University, New York; Walsh McDermott, M.D., Associate Professor of Medicine, Cornell University, New York; Harold G. Wolff, M.D., Associate

A new edition of Cecil's Medicine is always an event of interest both to the internist and to the general practitioner. This book has been the standard text of the present generation of practitioners and medical students, just as Osler was the constant guide of our fathers in medicine. The new edition does not suffer by comparison with previous ones.

Dr. Cecil has had associated with him as editors, Robert F. Loeb, Alexander B. Gutman, Walsh McDermott, and Harold G. Wolff. The editors have added twenty new subjects, and yet have managed to shorten the volume by 136 pages with no sacrifice of important material. This has reduced the thickness of the book by one centimeter, making it somewhat more easily handled. Some eighty-two new articles on subjects previously covered have been prepared.

Certain trends may be worthy of mention. There is a new section on collagen diseases. ACTH and cortisone are discussed fairly well in several sections of the book. Infectious mononucleosis is now classed as a viral disease. There is a new section on inborn errors of metabolism. Richards has an interesting discussion of pulmonary function in health and disease. Many revisions have been made in the field of endocrinology, and a recurrent theme throughout the entire volume is the importance of endocrine and emotional factors in many disease processes.

One word of criticism is in order. Colorado Tick Fever is a proven and well-defined clinical entity of some years standing. It is mentioned nowhere in this book.

THEODORE K. GLEICHMAN, M.D.

Primer on Fractures: Prepared by the Special Exhibit Committee on Fractures in Cooperation with the Committee on Scientific Exhibit of the American Medical Association; Sixth Edition. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, 1951. Price, $2.00.

This small (109 pages) book presents the essential principles of emergency treatment of fractures and application of plaster of paris bandages. For each of the common fractures of the body, the treatment is outlined as to reduction, immobilization and after care, with demonstration by drawings of the most accepted methods. It is regrettable, however, that the Committee on Fractures still advocates and even diagrams the use of the "banjo splint" for phalangeal fractures.

An unusual, but most practical, aspect of the primer is its blank pages on the left half of the book as space for the notes by the student or practitioner.

As it is concise and fairly complete as to the management of fractures, a student who would learn all that is contained in this short book would have little difficulty in treating almost any type of fracture.

MacDONALD WOOD, M.D.

Clinical Heart Disease: By Samuel A. Levine, M.D., F.A.C.P., Clinical Professor of Medicine, Harvard Medical School; Physician, the Peter Bent Brigham Hospital, Boston; Consultant Cardiologist, Newton-Wellesley Hospital; Physician, New England Baptist Hospital. Fourth Edition, illustrated. W. B. Saunders Company, Philadelphia and London, 1951.

To the long list of texts of cardiology, Dr. Levine has added his fourth edition of the clinical approach to heart disease. For those who are familiar with Levine's informal style of writing, this new edition will come as no great surprise except to bring them up to date; for those others who have not yet had the good fortune to read his previous books a treat is in store. From a long and rich experience, Levine brings a form of judgment and maturity so necessary in these harried days of increasing heart consciousness. It is as if one were attending his rounds and listening to his little stories of other cases which have fooled him that so enriches his writing.

This fourth edition comes to us at an important period in the field of cardiology. It brings up to date the therapy of subacute bacterial endocarditis and includes a section on anticoagulant prophylaxis. The section on congenital heart disease has been enriched by studies with cardiac catheterization, an understanding of which is essential for proper selection for surgery. The previously large section on electrocardiography has been further expanded to include the latest in precordial and unipolar leads as they apply in the correct evaluation of coronary disease.

As a single text on heart disease, Levine's fourth edition is felt to be one of the most rounded of all presently on the market and is heartily recommended to all interested in the field.

ALLAN HURST, M.D.

Genetics in Ophthalmology: By Arnold Sorsby, Research Professor in Ophthalmology, Royal College of Surgeons and Royal Eye Hospital; Surgeon, Royal Eye Hospital, London. Butterworth & Co. (Publishers), Ltd., London, England. The C. V. Mosby Company, St. Louis, Mo., U. S. A., 1951. Price, $9.50.

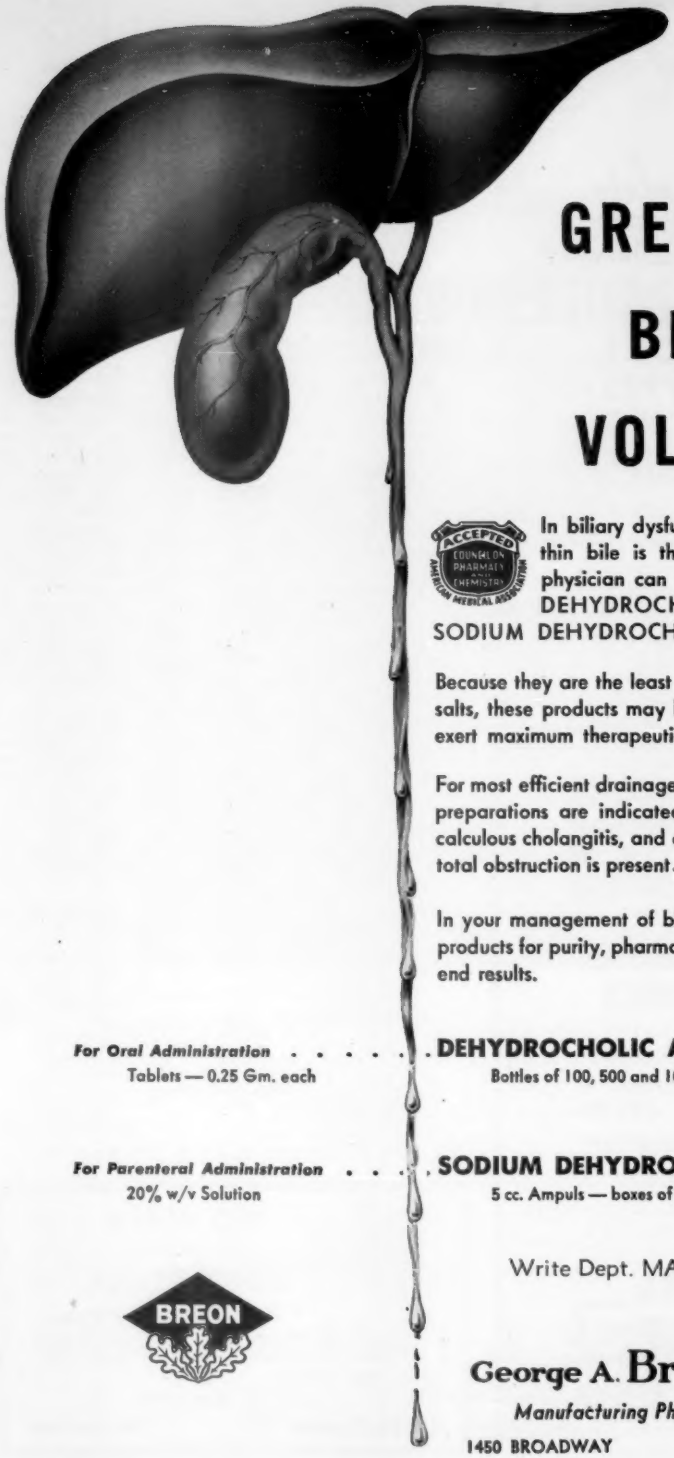
This new work by Arnold Sorsby is one showing an endless amount of research in the field of genetics in ophthalmology. A detailed review in limited space is not possible. The text requires close study and covers the field thoroughly.

The first section deals with theoretical concepts of modes of inheritance, some general concepts, human pedigrees, clinical varieties of genetic disease, and prospects in the control of genetic disease.

The second section deals with the globe as a whole, the cornea, lens, uveal tract, optic nerve and other tissues. Section three considers metabolic disorders, some systemic disorders and syndromes. A carefully prepared bibliography is appended.

Ophthalmologists and geneticists who take the time to study this new text carefully will find it most interesting and instructive.

JAMES M. SHIELDS, M.D.



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Tuberculosis Abstracts

Issued Monthly by the National Tuberculosis Association

Vol. XXV JANUARY, 1952 No. 1

CHEST X-RAYS ON ADMISSION PAY OFF

William Siegal, M.D., Robert E. Plunkett, M.D., and Herman E. Hilleboe, M.D., The Modern Hospital, July, 1951.

Routine chest x-ray examination of patients admitted to general hospitals is a fruitful method of finding new cases of pulmonary tuberculosis. The patient, the hospital staff, and the community all reap benefits. The procedure yields greater returns in discovering unsuspected disease than mass x-rays of the general population or school groups.

In New York State, outside of New York City, there are 166 voluntary, nonprofit, and publicly supported general hospitals which annually admit over 650,000 patients. The plan prepared by the New York State Department of Health and supported by public funds was developed cooperatively through the Health Department and these hospitals. Policies and procedures were set up in 1946 and briefly are as follows:

Any nonprofit general hospital with an inpatient admission rate sufficiently large to provide 4,000 admission chest x-rays annually is eligible to borrow complete photofluorographic equipment for taking 4" x 5" or 70 mm. films. The hospital received 50 cents for each report of an admission x-ray film submitted to the local health department. The department recommends that hospitals install equipment as close to the admitting rooms as is practicable in order to maintain a high percentage of x-rays on admitted patients.

Hospitals whose admission rate is less than 4,000 patients annually may also participate in the program by using their own equipment. For this service, they receive one dollar for each x-ray report submitted. Of the 166 general hospitals, fifty-eight are eligible for loan of photofluorographic equipment and the remaining 108 can participate by using their own equipment. The fifty-eight hospitals eligible for loan of equipment represent only 37 per cent of all the hospitals, but account for 67 per cent of all the admissions.

Any participating general hospital, in applying to the State Health Department, agrees that it will:

1. Make every effort to x-ray the chest of all admitted patients, 15 years of age and over.

2. X-ray the chests of all employees not previously x-rayed and of all new employees.

3. Make no charge to the patient for the initial x-ray examination and interpretation or for additional x-rays or services necessary to establish a diagnosis of tuberculosis.

4. Use the recommended diagnostic classification.

5. Submit an x-ray report for each patient and employee examined under this program to the local health official.

It was not expected that uniform procedures for the routine x-raying of admissions would be possible for all the hospitals. The following routine, however, was suggested and is being carried out with minor changes. Identifying information is entered on a special report form at the time of admission for every patient 15 years of age or over. If possible, he is x-rayed, usually without disrobing, before being taken to his room. If he is too ill to be r-xayed on admission, this is done as soon as his physical condition permits. The admission films, 4" x 5", 70 mm. or 14" x 17", are processed and interpreted within twenty-four hours and the diagnoses, if negative or nontuberculous, are checked on a special report form.

If the admission film shows definite or suspected tuberculosis, additional chest x-ray and other examinations are made for diagnostic and clinical evaluation. The diagnosis is entered on the admission x-ray report. Completed admission x-ray reports are sent frequently to the health officer. In addition, the hospital also furnishes the health officer with a monthly bill for the admission chest x-rav reports submitted to him. If active tuberculosis is found, the hospital then makes an official case report.

It is important that the hospitals use the same classification of disease, especially as it relates to tuberculosis, in reporting the results of these x-rays. The admission small or large film diagnosis is not considered the final diagnosis or determination of activity. Nevertheless, a tentative diagnosis is necessary in case patients do not remain in the hospital long enough for further detailed study when it is indicated. The health officer should know what persons with possible tuberculosis return to the community from the hospital. A tentative diagnosis, therefore, is made on all films. If the tentative diagnosis is definite tuberculosis, an estimate of clinical status is also made. If probably active, the extent of the disease is also noted. Films which indicate pleural effusion otherwise unexplained are considered to be probably active tuberculosis.

The follow-up of cases of definite and suspected tuberculosis found by the hospital is the health officer's responsibility. The admission x-ray reports sent to the health officer are a check on the number billed by the hospital for reimbursement; they are used also for detailed monthly reports which are sent to the State Department of Health. The health officer maintains a separate file of positive x-ray reports and arranges for follow-up examinations. These include provision for diagnostic and clinical determination for each person reported and adequate medical care. For each report of a definite or suspected case of tuberculosis, the health officer submits to the department at the end of six months, a summary of what has happened to the person during the interval.

An analysis of the initial chest x-ray examinations of adults admitted to the general hospitals participating in this program from May, 1947, to January, 1950, shows that:

A total of 195,751 patients, 15 years of age and over, had chest x-rays taken on admission to forty-one general hospitals. The largest number of patients examined (48 per cent of the total) was in the age group 15 to 34. Females outnumbered males two to one; the ratio of females to males was in excess of four to one between the ages 15 to 34. From the initial hospital x-ray interpretations, 3,976 or 20.3 for every 1,000 patients x-rayed, were tentatively diagnosed definite or suspected tuberculosis. Of these 1,005 or 5.1 per 1,000 x-rayed, were considered to have probably active pulmonary tuberculosis. For all ages the prevalence of probably active pulmonary tuberculosis was three times as great among males as among females, the highest prevalence being in males 45 years of age and over.

The distribution of the probably active cases by stage of disease was: minimal 47 per cent, moderately advanced 35 per cent, and far advanced 18 per cent. Fewer minimal and more advanced cases are found in general hospital patients than in community surveys.

Of 126,190 admission chest x-rays during the period between January, 1948, and June, 1949, inclusive, 2,642 showed evidence of definite or suspected tuberculosis, of which 2,145 had not been previously reported and were considered new cases. Of these, 71.7 per cent received follow-up examinations within six months of the initial hospital diagnosis.

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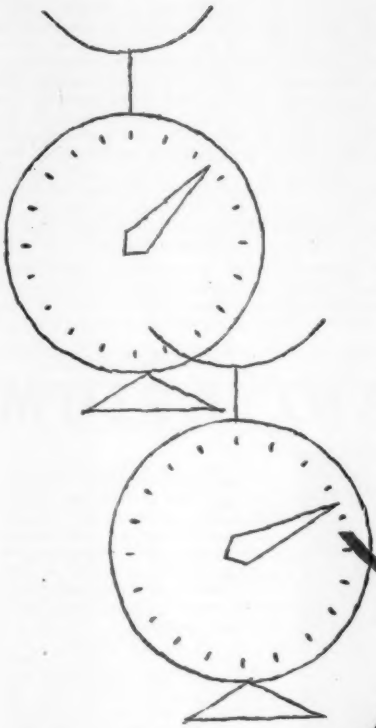

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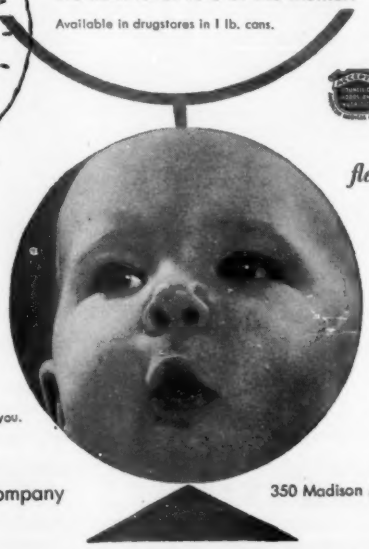

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1 Gardner, L. I., Butler, A. M., et al.: Pediatrics 5:228, 1950
2 Nesbit, H. T.: Texas State J. M. 38:551, 1943
3 Bull. National Research Council No. 119 Jan. 1950
4 Recommended Daily Dietary Allowances, Revised 1948, Food and Nutrition Board, National Research Council

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activity undetermined and suspicious for tuberculosis after follow-up, it is estimated that, if adequate follow-up had been possible for all the 2,145 new cases of definite or suspected tuberculosis, a ratio of 2.5 active cases of tuberculosis would be found for every 1,000 patients x-rayed.

Vol. XXV FEBRUARY, 1952 No. 2

TREATMENT OF MINIMAL TUBERCULOSIS

Julia Jones, M.D., The NTA Bulletin, September, 1951.

All pulmonary tuberculosis is minimal in its early stages and progression may be avoided by effective treatment. Minimal disease is usually unaccompanied by symptomatic illness so is frequently demonstrated only by roentgenogram. The discovery of disease in its early and curable forms is one of the purposes of case-finding programs. While the wisdom of these programs is established, they fall short of complete accomplishment unless subsequent treatment is effective. Once minimal disease has been identified, its progression must be accepted as failure.

Because the lesions are small and the patient has few, if any, symptoms, one is tempted to attach less significance to minimal disease than to the advanced disease. Rather than to reassure himself and the patient by thinking of "just a little spot on the lung," the physician needs to consider the lesion as the focal area from which disabling disease may occur and to take advantage of the opportunity for simple, less costly, and more effective treatment.

Individuals vary in their ability to heal tuberculosis infection. The majority of those first infected with the disease remain well and infection is indicated only by reaction to tuberculin. Small areas of calcification may appear eventually in lung or lymph nodes. In others irreversible damage occurs, and necrotic tissues may liquefy and slough into nearby bronchi and healthy lung. While the patient may be without symptoms, the x-ray reveals small shadows of pneumonic disease and a "minimal" lesion is diagnosed. The patient may then develop sufficient resistance to prevent further extension. In this case, he either remains well or may harbor areas of chronic infection which undergo evolution after considerable lapse of time.

Except by hindsight, it is not possible to distinguish between the individual who can control his minimal lesion without treatment and the patient in whom progressive disease may occur. This often proves costly for the patient and the community. Since some undetected lesions are controlled without treatment, residual shadows may later be encountered in routine x-ray examinations. For this reason various factors including the pathologic age and character of lesions discovered in asymptomatic individuals need consideration before treatment is advised.

Previous x-ray examinations may demonstrate that the lesion is newly acquired and must be assumed active and unstable. Symptoms or the presence of tubercule bacilli in sputum or gastric contents may indicate activity. In adolescents and young adults, most minimal disease is recently acquired and quite unstable. While new disease may be acquired throughout life, lesions occurring in older persons may represent old unidentified disease needing only periodic examination. Lesions must be subjected to clinical scrutiny establishing their duration and potentialities. From these studies will emerge those patients with early, minimal disease. Effective treatment of this group constitutes the major problem in dealing with minimal disease.

Early lesions are small areas of tuberculous bronchopneumonia which may resolve completely, leaving essentially normal lung tissue. On the other hand, the tissues within this area may be destroyed, leaving cavities from

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which dissemination may occur. Even in the smallest lesion demonstrable by x-ray, some areas have undergone destructive changes. The outcome of any case depends upon the extent and character of the disease, individual factors of resistance, and the manner in which the latter are influenced by treatment.

The therapeutic program is developed from the following considerations. Since the minimal lesion represents recent extension of disease from microscopic foci of greater duration, it must be assumed that the patient, at this stage, has inadequate resistance to control his disease. Treatment must be directed toward increasing resistance. Much of the lesion may be reversible if the lesion has been discovered soon after it has developed. Immediate treatment is urgent before further evolution produces less reversible lesions. If further extensions of disease take place, each new lesion has potentialities for breakdown and further dissemination. The presence of small necrotic foci must be assumed in all minimal lesions and their extent limits the effectiveness of cure.

Rest is the foundation of the therapeutic program. Experience indicates that rest favors development of resistance, thus enabling the tissues to suppress activity of the tubercle bacillus, remove products of inflammation, and to control areas more permanently damaged. Spreading disease occurs less often when patients are in bed. Bronchial secretions are decreased during bed rest, and this factor probably plays an important part in decreasing the hazard of dissemination through the bronchi.

Bed rest is most effective during the carly period of treatment when the lesions are reversible and most unstable. For this reason, it is advocated that patients with early lesions be put to bed immediately upon identification of their lesions. Often this is difficult since the patient feels well. Compromises which permit him to continue his normal activity while the lesion is observed, may jeopardize his future health and happiness.

It is difficult for a asymptomatic individual to make the transition from an active life to complete rest. Given thorough understanding of his problem and the odds at stake and given day to day assistance in meeting the aggravations of inactivity, the usual patient is less unhappy from his treatment than from a set-back of progressive disease. An intelligent individual is able to accept the depressing aspects of tuberculosis infection and inactivity. Recognition of individual problems is necessary and special assistance may be needed.

It seems wise to continue bed rest until stability of the lesion can be assumed. This implies absence of constitutional symptoms and an unchanging lesion by roentgenogram. Clearing of reversible elements occurs usually in from four to six months. Subsequent change by x-ray may be slight and quite slow. From this point treatment is directed toward control of more permanently damaged areas whose presence must be assumed. The time necessary depends on the patient's clinical course, personal situation, and anticipated demands of his normal activities. Resumption of activity must be gradual since bed rest is deconditioning.

In some cases, the administration of streptomycin and para-aminosalicylic acid may be wise. But bacterial resistance may develop and, since the minimal lesion is potentially the advanced lesion, an effort must be made to conserve this temporary support for urgent needs.

Most patients recover permanently from minimal disease if rest is adequate. A few develop more chronic disease which continues to threaten health, and in this group it may occasionally be necessary to add collapse or other surgical therapy.

Effective treatment of minimal tuberculosis must be prompt and thorough. The patient must be thoughtfully taught about his disease if full cooperation is to be achieved. Most patients recover completely and resume their previous activities, but needs for vocational retraining must be visualized. Regular medical supervision wisely continues after recovery and resumption of normal living.

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It takes 3 dimensions

to build a sound infant formula

LACTUM has these three dimensions ... for Lactum is an evaporated whole milk and Dextri-Maltose® formula.

Its proportions are those of milk and Dextri-Maltose formulas used successfully in infant feeding for forty years.

And its caloric distribution (16% protein, 34% fat, 50% carbohydrate) is based on authoritative pediatric recommendations.

and Lactum has a 4th dimension
... time-saving convenience

Lactum feedings are prepared simply by adding water. A 1:1 dilution provides 20 calories per fluid ounce.

For Premature and Full Term Infants with Low Fat Tolerance

DALACTUM. Mead's evaporated low fat milk and Dextri-Maltose formula, offers the same convenience as Lactum. Diluted 1:1, it too supplies 20 calories per fluid ounce.

MEAD'S

MEAD JOHNSON & CO.
EVANSVILLE 21, IND., U. S. A.